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Project No.: EG. CPR/99/C31
 Project No.: 16000797
 Contract No.: 05/031

Final Report

United Nations Industrial Development Organization (UNIDO)

for the Project Entitled UNDP/GEF Energy Conservation and Greenhouse Gas Emissions Reduction in Chinese TVEs Phase II

Subcontract Title Brick Sector Replication Projects for Energy Efficiency (1)

Submitted by

Xi an Research and Design Institute of Wall & Roof Materials

UNDP/GEF Energy Conservation and GHG Emissions Reduction in Chinese TVEs—Phase II

Brick Sector Replication Projects for Energy Efficiency (1)

Final Report

Project No.: EG/CPR/99/G31 Agresso No.: 16000797 Contract No.: 05/031

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Xi'an Research and Design Institute of Wall & Roof Materials June, 2006

Contents

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| 1 Preface and Thanks |
|--|
| 1.1 Preface2 |
| 1.2 Thanks2 |
| 2. Summary of the project and result of technical renovation |
| 2.1 Achievements of the project2 |
| 2.2 Proposal |
| 3. Final accounts of the project |
| 4 Summary of specific work5 |
| 4.1 Project task |
| 4.2 Summary of activities and progress7 |
| 4.3 Summary of completing institution of the 15 replication technical renovation10 |
| 4.3.1 Hollow Brick Plant, Baling Town, Baqiao District, Xi'an |
| 4.3.2 Hongqi New Type Building Materials co., Xi'an |
| 4.3.3 Hongfang Building Materials Co13 |
| 4.3.4 Baling Liucun Brick Plant, Baqiao District, Xi'an14 |
| 4.3.5 Molingmiao Brick Plant15 |
| 4.3.6 Qinling Building Materials Co16 |
| 4.3.7 Shenwei Wall materials Plant, Xi'an |
| 4.3.8 Shenlu New Type Building Materials Co. Ltd, shaanxi |
| 4.3.9 Shenlufang No.5, Brick Plant, Baqiao District, Xi'an |
| 4.3.10 Shijiadao Hollow Brick Plant21 |
| 4.3.11 Xi'an Oriental Hollow Brick Plant |
| 4.3.12 Chang'an Xibei Building Plant23 |
| 4.3.13 Xiangfa New Building Materials Co., Xi'an |
| 4.3.14 Hongqi St. Xiangyanggou Brick Plant, Baqiao District, Xi'an |
| 4.3.15 Xinyue Industry and Trade Co. Ltd |
| Appendix 1~15: 15 Certificate of Acceptance |

Appendix 16: M&E Form: Brick-making Sebsector Replication Project

1 Preface and Thanks

1.1 Preface

This document is the final report of technical renovation for fifteen recipient plants submitted to Project Management Office (PMO) and the United Nations Industrial Development Organization (UNIDO), prepared by Xi'an Research and Design Institute of Wall & Roof Materials, related to the project of "Energy Conservation and GHG Emissions Reduction in Chinese TVEs-Phase II". This report covers the work and achievement completed during the beginning of March and the middle of August 2005.

Project title: Energy Conservation and GHG Emissions Reduction in Chinese TVEs (Phase II) —Brick Sector Replication Projects for Energy Efficiency (1) Project No.: EG/CPR/99/G31, P.O.No. 16000797 Contract No.: 05/031

The contract of this project was signed on the beginning of March. Our Institute completed two parts of the tasks stipulated in the contract through ten activities.

This report includes the following parts.

- a) Summary of achievements
- b) Final accounts
- c) Summary of progress

1.2 Thanks

We greatly appreciate the help from the following personnel. Without their support and guide, we can't complete this project smoothly.

Mrs. Wang Guiling, Deputy Director of PMO

Dr. Zhang Zhihong, Chief Technical Adviser of UNIDO

Mr. Song Dongfeng, Contract Officer of PMO

Other personnel of Beijing Hongyuan Environment and Energy Technology Company

Mrs. Mounira Latrech, Contract Officer of UNIDO

Dr. Enver Khan and other working personnel

2. Summary of the project and result of technical renovation

2.1 Achievements of the project

Until the middle of August 2005, our Institute completed all works stipulated in the Contract of renovation for fifteen brick-making recipient enterprises in Xi'an area, including construction on site and consultation work.

The total investment for fifteen recipient enterprises was US\$1,030,774.08 million, comprising US\$850,774.08 million co-financing of the beneficiary plants and US\$180,000.00 million UNIDO subsidy fund. The co-financing to the UNIDO subsidy fund is 4.7:1.

Through the technical renovation, the total energy saving is 9910.09 tons of coal equivalent (tce) yearly, or 660.67 tce per year apiece for a total of 15 brick plants. The energy-saving target for each replication project of 600 tce per year on average stipulated in the Contract is completed. And gas emission of CO_2 is reduced 24705.85 tons.

According to the specific institution of each plant, through renewing old equipments and adopting advanced and practical equipment, repairing old annular kiln and building new annular kiln, and improving and perfecting production process and management system to make arrangement of the renovated production line of each replication enterprise reasonable, the product's quality and output of each replication plant is improved at different degree and the consciousness of modern management and energy conservation is reinforced.

The details are as follows.

1. Adopting technical renovation measure implemented in pilot enterprise to reduce coal consumption and electricity consumption and gas emission of CO₂.

In energy conservation renovation for the pilot enterprise, Xi'an Liucun Hollow Brick Plant, technology such as new energy-saving annular kiln, electricity-saving compensator, transducer and rectangular hole was adopted to reduce coal and electricity consumption greatly and brought good economic benefit to the plant.

With adopting energy conservation technology and the successful experience benefited from the pilot enterprise, technical renovation for 15 replication brick-making enterprises get good result. Coal consumption and electricity consumption of each plant is reduced at different degree, while the energy consumption of 10 thousand bricks of part plants is superior to pilot enterprise. For example, the energy consumption of 10 thousand bricks in Shenwei Wall materials Plant, Xi'an is 1.01 tons of coal equivalent (tce) and that in Shijiadao Hollow Brick Plant is 1.03 tce, both are superior to 1.06 tce in Xi'an Liucun Hollow Brick Plant. As well gas emission of CO_2 resulted from burning coal is reduced due to low coal consumption.

Energy conservation renovation bring direct and obvious economic for enterprise, strengthen the consciousness and decision of developing energy-saving and GHG reduction work of each enterprise and bring along technical renovation in brick and tile enterprises. For example, the other brick and tile enterprises including Zhongdian Brick Plant, Baqiao District, Xi'an, Zhixing Brick Plant, Changan District, Xi'an, and Xi'an Aoda Longtian Co. Ltd hope to implement technical renovation in their enterprise. At present, electricity compensator has become the popular energy conservation technology in brick and tile enterprise in Xi'an and Shaanxi.

(The detailed energy consumption and investment of each plant see brick-making replication form of Xi'an 15 replication enterprises.)

2. To help the enterprises perfecting management system and improving production efficiency by developing energy-saving technology and modern management knowledge training.

Before the renovation, high economic benefit is from high output through working over time blindly in each enterprise. As well the management in production process is not strict, which results in high cost, high energy consumption and high rejected product rate. During the implementation process, we develop the staff training for technical and key position operation personnel and manager of each enterprise to make them grasp the main point to his own position, and help enterprise building and perfecting management system and determining energy consumption index for each position. Furthermore the personnel is conscious that output, product quality and factual institution of energy saving is related to their working closely. So the production efficiency and rate of qualified product is improved and energy consumption is reduced. (Details of training see 4.2 of the report)

3. Carving visual field and renewing thought and idea of the enterprises through the technical renovation.

Through visiting pilot enterprise on the spot and participating in training, the enterprises understand that the application of new technology and new idea can bring huge motive force for enterprise's development and considerable economic benefit. Each enterprise is willing to pay more attention to renewing technology and knowledge of staff, and to invest more much capital in adopting new technology and energy conservation equipments. The enterprises change the idea that they would rather hire labor by much money than invest more capital in renewing technology with long payoff period.

Each enterprise works out a long-term plan on new product development, energy conversation, staff training and technical renovation to do good spadework for perfecting competitive market.

2.2 Proposal

We propose to set up standard system of energy efficiency, energy consumption and GHG emission in order to develop work of energy conservation and GHG emission in law, and to prompt the development of the work more forcefully in large range.

1. Drawing up standard of limit of environmental pollution smoke emission of brick and tile kiln and accessories.

Most of the fuel is coal in brick and tile industry in China, and the majority is inferior coal. A large of carbon dioxide and sulfur dioxide produced from burning coal pollutes the air seriousely and aggravates the greenhouse effect. Drawing up the standard will prompt the environmental protection.

- Drawing up standard of management and furnishing of energy measure equipment in brick and tile enterprise.
 Drawing up the standard will prompt exact measure and scientific management of the energy management work in brick and tile enterprise, and make it to be the focal point of day-to-day work.
- 3. Drawing up series standard of energy consumption determining method in brick and tile industry including testing and calculating of energy consumption grade quota, heat balance, heat efficiency, unit product heat consumption and unit product coal consumption of industry kiln for burning brick and tile and drying chamber.

Drawing up the standard system can help the enterprise knowing current self-energy consumption institution and the potentiality of energy saving, providing standard basis for healthy and orderly development of brick and tile industry, and prompting technical advance in brick and tile industry so that the work of energy conversation of Chinese brick and tile industry develop in order and continuously.

4. During the technology advance and development process of brick and tile industry, relevant standard on the basis of measure and determination of resources comprehensive utilization in brick and tile industry should be drawn up to move overall, coordinated and continuous growth of the work of forbidding the use of clay solid brick and wall material reform.

3. Final accounts of the project

Xi'an Research and Design Institute of Wall and Roof Materials of China Building Material had completed energy conservation technical renovation of 15 replication brick and tile enterprises in Xi'an. Final accounts of total investment for 15 replication enterprises are US\$ 1,030,774.00, comprising US\$180,000.00 UNIDO subsidy fund and US\$850,774.00 co-financing of the replication enterprises. The co-financing to UNIDO subsidy fund is 4.7:1.

The total UNIDO investment for this subcontract is US\$180,000, or US\$12,000 apiece for a total of 15 brick plants on average. 30 percent of UNIDO subsidy fund is for consulting services and engineering services, while 70 percent is reserved for the necessary material and equipment

purchase and construction for the beneficiary plants. The co-financing is fully used for equipment purchase and construction.

Final accounts of each enterprise see table 1.

| | | | | | Un | it: US\$1,000 |
|----|--|--|-------------------|------------|------------------|--|
| No | Name of Enterprise | Budget Allocation in Feasibility | Final Accounts | Co-finance | UNIDO Subsidy | The Co-finance to the UNIDO Subsidy Fund |
| 1 | Hollow Brick Plant, Baling Town, Baqiao District, Xi'an | 62.300 | 62.507 | 50.507 | 12.00 | 4.2 |
| 2 | Hongqi New Type Building Materials Co. Xi'an | 67.133 | 69.765 | 57.765 | 12.00 | 4.8 |
| 3 | Hongfang Building Materials Co. | 60.000 | 68.273 | 56.273 | 12.00 | 4.7 |
| 4 | Baling Liucun Brick Plant, Baqiao District, Xi'an | 56.206 | 65.248 | 53.248 | 12.00 | 4.4 |
| 5 | Molingmiao Brick Plant | 97.796 | 103.165 | 91.165 | 12.00 | 7.6 |
| 6 | Qinling Building Materials Co. | 60.227 | 60.424 | 48.423 | 12.00 | 4.0 |
| 7 | Shenwei Wall materials Plant, Xi'an | 61.014 | 64.483 | 52.483 | 12.00 | 4.4 |
| 8 | Shenlu New Type Building Materials Co. Ltd, shaanxi | 59.854 | 60.319 | 48.319 | 12.00 | 4.0 |
| 9 | Shenlufang No.5, Brick Plant, Baqiao District, Xi'an | 59.849 | 61.651 | 49.651 | 12.00 | 4.1 |
| 10 | Shijiadao Hollow Brick Plant | 65.892 | 61.995 | 49.995 | 12.00 | 4.2 |
| 11 | Xi'an Oriental Hollow Brick Plant | 60.963 | 60.970 | 48.970 | 12.00 | 4.1 |
| 12 | Chang'an Xibei Building Plant | 70.244 | 81.125 | 69.125 | 12.00 | 5.8 |
| 13 | Xiangfa New Building Materials Co., Xi'an | 60.470 | 61.537 | 49.537 | 12.00 | 4.1 |
| 14 | Hongqi St. Xiangyanggou Brick Plant, Baqiao District, Xi'an | 68.824 | 87.963 | 75.963 | 12.00 | 6.3 |
| 15 | Xinyue Industry and Trade Co. Ltd | 60.291 | 61.349 | 49.349 | 12.00 | 4.1 |
| 16 | Total | 971.063 | 1,030.774 | 850.774 | 180.00 | 4.7 |

Table1 Final Accounts of Technical Renovation for15 Replication Enterprises in Xi'an

4 Summary of specific work

4.1 Project task

Our Institute completed two parts of the task under this subcontract.

Part One involves consulting services for 15 potential replication plants, including carrying out a plant-level assessment, preparing a project proposal and feasibility study, and setting up a plant-wide management system.

Part Two involves engineering services to implement the 15 replication projects, including

engineering design and construction, equipment purchase and installation, and personnel training. Specific tasks are as follows.

Part One: Consulting Services

- 1. Conduct a comprehensive assessment of 15 recipient brick plants, including but not limited to the following aspects: production processes, technologies and equipments, raw materials, energy and electricity use, products, output, and markets, production workers and technical personnel, ownership, fixed assets, loans, and other financial information.
- 2. Based on the above assessment and in consultation with plant management, propose a list of measures and investments to the plant management to upgrade the original production technologies and equipment, which will result in improved product quality, less energy consumption, and a more profitable enterprise in the long run. The energy-saving target for each replication project should be at least 600 tons of coal equivalent (tce) per year on average. The contractor may draw on the successful experiences of the pilot plants in terms of technology, equipment, and management, but the proposed renovation measures and investments must suit the conditions of the potential replication plants.
- 3. Conduct a feasibility study of the proposed measures and investments (including energy savings) and devise an implementation plan for engineering design and construction, equipment purchase and installation, testing and commissioning, training of operators, as well as financing arrangement. In the feasibility study, the contractor should devise in detail the use of the 70 percent reserved for equipment purchase and construction for the beneficiary plants.
- 4. Ensure that the proposed renovation project is fully agreed by the plant management and that co-financing can be and will be arranged to implement the project. The minimum co-financing requirement from the recipient plants to the complete technical renovation project budget is 4:1 (includes technical services and equipment procurement). It is imperative that co-financing of the beneficiary plant will be made available for project implementation in the timeframe specified in the implementation plan.
- 5. Assist each plant management to set up a system (or strengthen the existing system if one already exists) so as to improve the current practices of production management, energy management, quality inspection, personnel training, and other areas that may require attention.

Part Two: Engineering Services

1. Based on the feasibility study and implementation plan agreed by the plant management, conduct engineering design for each of the renovation projects.

- 2. Assist the plant management in selection and purchasing the required equipments and ensure their installation, testing, and commissioning.
- 3. Ensure that the renovation projects meet relevant environmental and safety standards and the projects are approved by the local environmental and other relevant authorities.
- 4. Provide relevant training to the plant operators and technical personnel as necessary.
- 5. Provide other engineering services to the plant management to ensure smooth operation of the new equipment and processes so that they meet the specified parameters and targets.
- 4.2 Summary of activities and progress

To ensure the project implementing smoothly, we organized working team for the project. The team has ten members. They are efficient and high-level technical professors with rich experience in brick plant design, energy efficiency renovation and production management.

The leader of this team and UNIDO liaison man is Mr.Xiao Hui, the president of Xi'an Research & Design Institute of Wall and Roof Materials.

Members: Zhou Xuan, Wang Baocai, Linling, Tang Baoquan, Lu Xiaobin, Cheng Xiangwei, Jiang Xianli, Liu Zhaozhong, Liu Xiaodong.

The team leader and relevant personnel attended a briefing meeting of the project in Beijing on March 11, 2005 and had an informal discussion with the officer of UNIDO, person in charge of PMO and LPIC, and Beijing Hongyuan Environment and Energy Technology Company. We introduced preparation institution including advantage of our Institute and work plan and way for implementing the project and discussed technical schedule and plan.

Our Institute completed two parts of the tasks through ten activities.

Activity 1 Investigation the basic situation of each plant and evaluation on the enterprises From March 12, 2005 to March 23, 2005, the working team investigated the 15 replication plants to know the basic situation. Xi'an Wall Material Reform Office attended.

Activity 2 Holding seminar and proposing technical renovation plan

From March 13, 2005 to March 30, 2005, Xi'an wall material reform office organized 2 times seminars to determine the technical plan of each beneficiary plant. All the members of the working team and managers of 15 beneficiary plants attended.

Activity 3 Completing feasibility study report

Based on the investigation and seminar, our Institute completed the feasibility study report and the detailed list of equipments for 15 replication enterprises. The 15 plants accepted their own feasibility study report. And they signed the letter of commitment to assure that they would implement technical renovation according to the plan in the Feasibility and reserve the UNIDO subsidy fund for purchasing equipment listed in the Feasibility and assure the co-financing.

The 15 *Feasibility Study Report* was completed on April 2, 2005 and submitted on May 12, 2005. The main contents are as follows.

- a) General
- b) Market prediction
- c) Evaluation on resource
- d) Production scale and product dimension
- e) Current institution of the replication and technical renovation plan
- f) Working schedule
- g) Budget allocation and financing
- h) Financial evaluation
- i) Evaluation on energy efficiency and environment
- j) Conclusion and suggestion

Activity 4 Submitting working drawing and list of equipments

By April 21, 2005, the working drawing was completed and it was submitted directly to 15 beneficiary plants. The catalogue of the drawing and list of equipments were submitted to UNIDO and PMO.

Activity 5 Equipment purchase and old equipment renovation

The new equipments were begun ordering from April 22, 2005. Engineering construction was begun at the same time.

The Progress Report was completed and submitted to UNIDO and GEF on June 27, 2005.

Activity 6 Engineering construction and equipment installation

The new equipments were transported to relevant plant successively and were installed next. The new equipments installation and old equipments renovation was completed on July 3, 2005.

Activity 7 Project's commissioning and evaluation on actual result

Commissioning of the 15 technical renovation projects and evaluation on actual result was completed by July 15, 2005. Then the *Installation and Commissioning Report* was submitted to UNIDO and PMO.

Activity 8 Management system construction

All together with the commissioning, working team helped the 15 beneficiary plants to set up and perfect management system according to apiece institution.

On the basis of investigation and assessment of enterprise's institution and according to its factual institution, experts of the working team helped the Plant constructing new management system or renewing original management system, setting up purchasing and using regulation of coal and electricity, post operation system and quality testing system of the product, and perfecting system of quota responsibility, rewards and penalties, and consumption index in order to strengthen production management, energy management and quality inspect and improve management production level. The main contents includes following aspects.

- ♦ Develop modern enterprise management knowledge training for the manager.
- \diamond Help the enterprise perfect the original management system.
- \diamond Draw worker regulations for the factory.
- ♦ Set up inspective and controlling management system for consumption of coal and electricity.
- ♦ Draw workshop management system.
- ♦ Draw equipment management system.
- ♦ Draw product quality inspecting and management system.
- \diamond Set up and perfect financial, staff and salary management system.
- \diamond Set up worker operation manual.

Activity 9 Staff training including energy conservation and relevant technology training From July 15, 2005 to July 22, 2005, field training of 15 Plants was completed. From July 25, 2005 to July 28, 2005, managers and workers of key position were centralized training.

a) During the construction, developing training for the workers of key position about detailed work to improve their job skill

Training for: operator on key position

Training site: 15 Plants

Training time: during the services for the plant by experts

Training content:

- ♦ Operation rules and routine maintenance for machinery equipment.
- ♦ How to establish and control firing system of Hoffmann kiln.
- ♦ Emergency measures of firing process of Hoffmann kiln.
- ♦ How to utilize new technology and new equipment to save energy and reduce consumption.
- b) Centralized training

From July 25, 2005 to July 28, 2005, Xi'an Research and Design Institute of Wall & Roof

Material held a training class for the replication enterprise in Tangyu Holiday Village, Mei County, Shaanxi during. There were 50 persons including manager and vice manager of the replication enterprises, part of key position technical person, local government officers and subcontractor in this training class.

Training for: main technical and management personnel and workers on key position

Training site: Tangyu Holiday Village, Mei County, Shaanxi

Training time: From July 25, 2005 to July 28, 2005

Training content:

- Target of this project, important technology and target and effect of energy conservation and GHG reduction.
- ♦ The enterprise's situation of Chinese brick making and domestic and international new technology development trend.
- The propaganda of the file and preferential policy of the national relevant walls material reforms.
- ♦ Means and method of the production management.
- \diamond Standards of brick and tile.
- ♦ Precondition and method of improving product's quality.
- ♦ Establishment of modern enterprise management system.
- ♦ Installation and commissioning of energy conservation equipment land, safety technology in operation.
- Management of energy conservation equipment and kiln in brick-making plant. Training method:
 - a) Adopt lessons, discuss and answer questions.
 - b) The experts gave lessons with the unified teaching material, combining teaching by oneself.

4.3 Summary of completing institution of the 15 replication technical renovation

By the middle of August, the completed result of 15 replication plants is as follows.

4.3.1 Hollow Brick Plant, Baling Town, Baqiao District, Xi'an

- 1. Completed content of process design
 - a) Process layout drawing
 - b) Installation drawing of the following newly added equipments
 - i) Type $\phi 800 \times 600$ high speed fine rolls
 - ii) Type JZK50/45-3.0 vacuum extruder
 - iii) Cinder crusher
 - c) Repair scheme of the original annular kiln was completed. The leak of kiln was repaired. Technology of advanced heat preservation and energy saving was adopted, including using the

heat preservation materials such as rock cotton, cinder and vermiculite to airproof the kiln. The kiln roof was removed and rebuilt. The chamber's wickets were repaired. Temperature tester was added for annular kiln.

- d) Completing renovation schedule of electric equipments

 set of transducer was added to exhaust blower. 1 set of non-power compensator was added
 to motor of extruder and mixer apiece. 4 sets of non-power compensators were added to motor
 of rolls.
- 2. Order, renovation, installation and commissioning of the process equipments and electric equipments listed in Form 2 were completed. All the equipments are running well (% indicates the equipment or item invested by UNIDO subsidy fund).

| No. | Name | Type/Model | Unit | Quantity | Remark |
|-----|---|--------------|------|----------|--------|
| 1 | Excavator | ZL30PG | Set | 1 | |
| 2 | Hi-speed fine rolls | ф 800×600 | Set | 1 | |
| 3 | Cinder Crusher | 600×630 | Set | 1 | í |
| 4 | Non-power compensator for motor of mills | WMJ series | Set | 4 | ☆ |
| 5 | Non-power compensator for motor of mixer | WMJ series | Set | 1 | \$ |
| 6 | Non-power compensator for motor of Type 45/40 vacuum extruder | WMJ series | Set | 1 | \$ |
| 7 | Vacuum extruder | JZK50/45-3.0 | Set | 1 | |
| 8 | Vertical column cutter | QT107 | Set | 1 | |
| 9 | Measure apparatus of caloric value | Type NW | Set | 1 | |
| 10 | Transducer for exhaust blower | WMJ series | Set | 1 | ± |
| 11 | Die renovation | JZK50/45-3.0 | Set | 2 | |

Form 2 List of equipments

In addition, drainage system of green yard was renovated. Kiln roof was removed and rebuilt. Fee for installing and commissioning the equipments listed in form 1 and drainage system renovation was invested by UNIDO subsidy fund.

3. Comparison of the technical index between renovation before and after

Through running for three months, it is determined to saving 707 tons of coal equivalent (tce) per year, and to reduce gas emissions of $CO_2 1762$. 55 tons per year. Comparison of the technical index between renovation before and after sees form 3.

Form 3 Comparison of the technical index Between Renovation Before and After

| Index | Unit | Before | After |
|-------------------------|--|--------------|--------|
| Output | (Common brick equivalent) × 10,000 bricks/year | . 24,00 | 2,688 |
| Coal consumption | kg ce /10,000 bricks (Common brick equivalent) | 1,250 | 1,000 |
| Electricity consumption | kg ce /10,000 bricks (Common brick equivalent) | 70 | 54 |
| Rate of acceptance | Ж | 78 | 90 |
| Perforation | Ж. | 22~23, 33~35 | 25, 45 |

4.3.2 Hongqi New Type Building Materials co., Xi'an

- 1. Completed contents of engineer design
 - a) Process layout drawing
 - b) Installation drawing of hi-speed fine rolls
 - c) Installation drawing of two-stage vacuum extruder
 - d) Renovation schedule of repairing annular kiln and drainage system of green yard
 - e) Completing renovation schedule of electric equipments

1 set of transducer was added to blower. 1 set of non-power compensator was added to extruder.

2. Order, renovation, installation and commissioning of the process equipments and electric equipments listed in Form 4 was completed. All the equipments are running well (% indicates the equipment or item invested by UNIDO subsidy fund).

| No. | Name | Type/Model | Unit | Quantity | Remark |
|-----|--|--------------------|----------------|----------|--------|
| 1 | Repair annular kiln | 24 chambers | Set | 1 | |
| 2 | Repair green brick yard | 35,000 | m ² | 35,000 | ☆ |
| 3 | High-speed fine rolls | ф 800×600 | Set | 1 | |
| 4 | Bulldozer and accessory | Dong Fang Hong -70 | Set | 1 | |
| 5 | Energy conservation blower and accessory | ZFJ-8 | Set | 2 | ☆. |
| 6 | Accessory | / | Set | 5 | |
| 7 | Damp | 1 | Set | 24 | ☆ |
| 8 | Non-power compensator | WMJ series | Set | 1 | 자 |
| 9 | Transducer for blower | WMJ series | Set | 1 | \$ |
| 10 | Two-stage vacuum extruder | JZK50/45-3.0 | Set | 1 | |
| 11 | Vertical column cutter | QT107 | Set | 1 | |
| 12 | Temperature tester | 1200°C | Set | 1 | |

Form 4 List of equipments

- Comparison of the technical index between renovation before and after Through running for three months, it is determined that the renovation production line reaches the following targets.
 - a) The rate of acceptance is improved by 12 percent.
 - b) The comprehensive energy conservation is 632.98 tce yearly.
 - c) The gas emission of CO_2 is reduced 1,578.03 tons yearly.

Comparison of the technical index between renovation before and after sees form 5.

| Name | | Unit | Before | After |
|-------------------------|------------------------|--|--------|-------|
| Output | | (Common brick equivalent) ×10,000 bricks/year | 4,400 | 4,600 |
| Rate of acceptance | | % | 80 | 92 |
| Dorforation | Fired perforated brick | % | 23 | 25 |
| renoration | Fired hollow brick | % | 33 | 37 |
| Coal consumption | | kg ce /10,000 bricks (Common brick equivalent) | 1,100 | 970 |
| Electricity consumption | | kg ce/10,000 bricks (Common brick equivalent) | 61 | 54 |

Form 5 Comparison of the technical index Between Renovation Before and After

4.3.3 Hongfang Building Materials Co.

- 1. Completed contents of engineer construction
 - a) Completed process renovation (process layout drawing)
 - b) Installation drawing of the following equipments
 - i) Cinder crusher
 - ii) Type ϕ 800 × 600 hi-speed fine rolls
 - iii) Type SJJ240-36 mixing extruder
 - c) Repair scheme of the original annular kiln was completed. The leak of kiln was repaired. Technology of advanced heat preservation and energy saving was adopted, including using the heat preservation materials such as rock cotton, cinder and vermiculite to airproof the kiln. The kiln roof was removed and rebuilt. The chamber's wickets were repaired. Temperature tester was added for annular kiln.
 - d) Completing renovation schedule of electric equipments Transducer controlling system was added to kiln blower. Non-power compensator was added to extruder, hi-speed fine rolls and mixing extruder apiece. Electricity saving compensator was used.
- 2. Order, renovation, installation and commissioning of the process equipments and electric equipments listed in Form 6 was completed. All the equipments are running well (x indicates the equipment or item invested by UNIDO subsidy fund).

| No. | Name | Type/Model | Unit | Quantity | Remark |
|-----|--|------------|------|----------|--------|
| 1 | Excavator | ZL30PG | Set | 1 | |
| 2 | High-speed fine rolls | Ф 800×600 | Set | 1 | ☆ |
| 3 | Mixing extruder | SJJ240-36 | Set | 1 | |
| 4 | Cinder crusher | 600×630 | Set | 1 | |
| 5 | Non-power compensator for mills | WMJ series | Set | 4 | \$ |
| 6 | Non-power compensator for motor of mixer | WMJ series | Set | 1 | |
| 7 | Non-power compensator system for Type 45/40 extruder | WMJ series | Set | 1 | |
| 8 | Vertical column cutter | QT2000 | Set | 1 | |
| 9 | Measure apparatus of caloric value | Type NW | Set | 1 | |
| 10 | Transducer for exhaust blower | WMJ series | Set | 1 | |
| 11 | Model, die, core | JZK45/40 | Set | 2 | ☆ |

| Form 6 | List of equipments |
|--------|--------------------|
|--------|--------------------|

In addition, drainage system of green yard was renovated. Kiln roof was removed and rebuilt. Damp and fire core cover was changed. Fee for changing damp and fire core cover was invested by UNIDO subsidy fund.

3. Comparison of the technical index between renovation before and after

Through running for three months, it is determined to saving 787.19 tce per year, and to reduce gas emissions of CO_2 1,962.47 tons per year. Comparison of the technical index between renovation before and after sees form 7.

| Index | Unit | Before | After |
|-------------------------|--|--------------|--------|
| Output | (Common brick equivalent) × 10,000 bricks/year | 26,00 | 3,000 |
| Coal consumption | kg ce /10,000 bricks (Common brick equivalent) | 1,250 | 1,000 |
| Electricity consumption | kg ce /10,000 bricks (Common brick equivalent) | 70 | 54 |
| Rate of acceptance | % | 78 | 90 |
| Perforation | % | 22~23, 33~35 | 26, 40 |

Form 7 Comparison of the technical index Between Renovation Before and After

4.3.4 Baling Liucun Brick Plant, Baqiao District, Xi'an

- 1. Completed content of engineer design
 - a) Annular kiln renovation

The original 38 chambers annular kiln was repaired through removing and rebuilding the kiln roof and sealing the leak.

b) Green yard repairing

The original green yard of this plant was renovated. Fired hollow brick was used to make hack. The height of the hack was increased. The hack width is 0.6m, passage between hack is 1.4m, and hack height is 0.15m. The area of the green yard is 35,000m² after renovation.

c) Completing renovation scheme of electric equipment

1 set of non-power compensator was added to two-stage vacuum extruder. 1 set of transducer was added to energy conversation blower.

- d) Completing the following drawings
 - i) Process layout drawing
 - ii) Installation drawing of hi-speed fine rolls
 - iii) Installation drawing of two-stage vacuum extruder
- 2. Order, renovation, installation and commissioning of the process equipments and electric equipments listed in Form 8 was completed. All the equipments are running well (\Rightarrow indicates the equipment or item invested by UNIDO subsidy fund).

| No. | Name | Type/Model | Unit | Quantity | Remark |
|-----|--|-------------------|----------------|----------|--------|
| 1 | Remove kiln cover and rebuild it | 38 chambers | Set | 1 | |
| 2 | Drainage system renovation | 35,000 | m ² | 35,000 | |
| 3 | Hi-speed fine rolls | φ 800×600 | Set | 1 | |
| 4 | Vacuum extruder | JZK45/40 | Set | 1 | |
| 5 | Model, die, core | JZK45/40 | Set | 1 | |
| 6 | Vertical column cutter | QT107 | Set | 1 | Ö |
| 7 | Green cutter | YHQ18-425 | Set | 1 | 1 |
| 8 | Bulldozer | Dong Fanghong -70 | Set | 1 | |
| 9 | Tube | 550mm | Set | 2 | |
| 10 | Gear | M2-5 | Set | 2 | |
| 11 | Non-power compensator controlling system | WMJ series | Set | 1 | |
| 12 | Energy conservation blower | ZFJ-8 | Set | 1 | · 🛛 |
| 13 | Measure apparatus of caloric value | Type NW | Set | 1 | |
| 14 | Temperature tester of annular kiln | 1200°C | Set | 1 | |
| 15 | Transducer for blower | WMJ series | Set | 1 | |
| 16 | Conveyor | B500 | Set | 5 | |

Form 8 List of equipments

3. Comparison of the technical index between renovation before and after

Through running for three months, it is determined that the renovation production line reaches the following targets.

- a) The output is improved by 12 percent. The rate of acceptance is improved by 10 percent.
- b) The comprehensive energy conservation is 611.47 tce yearly.
- c) The gas emission of CO_2 is reduced 1,524.40 tons yearly.

Comparison of the technical index between renovation before and after sees form 9.

Form 9 Comparison of the technical index Between Renovation Before and After

| Name | | Unit | | After |
|-------------------------|------------------------|--|-------|-------|
| Output | | (Common brick equivalent) × 10,000 bricks/year | 2,148 | 2,400 |
| Rate of acceptance | | % | 83 | 93 |
| Perforation | Fired perforated brick | % | 22~23 | 25 |
| renoration | Fired hollow brick | % | 33~35 | 37 |
| Coal consumption | | kg ce/10,000 bricks (Common brick equivalent) | 1,200 | 950 |
| Electricity consumption | | kg ce/10,000 bricks (Common brick equivalent) | 71 | 63 |

4.3.5 Molingmiao Brick Plant

- 1. Completed content of engineer design
 - d) Process layout drawing
 - e) Installation drawing of Type ϕ 800 × 600 stone eliminating rolls
 - f) Installation drawing of Type Φ 800 × 600 hi-speed fine rolls
 - g) Installation drawing of Type JZK50 vacuum extruder
 - h) Installation drawing of Type SJ3000 double shaft mixer

- Working drawing of 24 chambers annular kiln
 Temperature tester and 1 set of Type ZFJ-8 energy saving kiln blower was used.
- j) Repair schedule of the original annular kiln
- k) Renovation schedule of electric equipments
 - 1 set of transducer controlling system was added to kiln blower. 1 set of non-power compensator was added to extruder.
- 2. Order, renovation, installation and commissioning of the process equipments and electric equipments listed in Form 10 was completed. All the equipments are running well (\mathfrak{A} indicates the equipment or item invested by UNIDO subsidy fund).

| No. | Name | Type/Model | Unit | Quantity | Remark |
|-----|-------------------------------------|------------|------|----------|--------|
| 1 | Stone-elimination mill crusher | Φ 800×600 | Set | 1 | |
| 2 | Hi-speed fine rolls | Φ800×600 | Set | 1 | |
| 3 | Double shaft mixer | SJ3000 | Set | 1 | ☆ |
| 4 | Column cutter | QJ1100 | Set | 1 | |
| 5 | Green cutter | YHQ18-425 | Set | 1 | |
| 6 | Two-stage vacuum extruder | JZK50/45 | Set | 1 | |
| 7 | Temperature tester for annular kiln | 1200°C | Set | 1 | |
| 8 | Damp for annular kiln | 1 | Set | 24 | |
| 9 | Blower | ZFJ-8 | Set | 1 | |
| 10 | Non-power compensator for blower | SL-10 | Set | 1 | \$ |
| 11 | Non-power compensator for | WMJ series | Set | 1 | |

Form 10 List of equipments

In addition, drainage system renovation, kiln renovation and commissioning and construction of new annular kiln were completed.

3. Comparison of the technical index between renovation before and after

Through running for three months, it is determined to saving 638.83 tce per year, and to reduce gas emissions of CO₂ 1,592.59 tons per year. Comparison of the technical index between renovation before and after sees form 11.

Form 11 Comparison of the technical index between renovation before and after

| No. | Unit | Before | After |
|-----|---|--------------|--------|
| 1 | Output (Common brick equivalent) × 10,000 bricks/year | 2,000 | 3,000 |
| 2 | Coal consumption (kg ce/10,000 bricks (Common brick equivalent) | 1,200 | 1,000 |
| 3 | Rate of acceptance (year, %) | 80 | 92 |
| 4 | Perforation (%) | 22-23, 33-35 | 26, 43 |
| 5 | Electricity consumption (kg ce/10,000 bricks (Common brick equivalent)) | 60 | 52 |

4.3.6 Qinling Building Materials Co.

1. Completed content of engineer design

- a) Process layout drawing
- b) Installation drawing of Type ϕ 800 × 600 hi-speed fine rolls
- c) Installation drawing of cinder crusher
- d) Working drawing of new 24 chambers annular kiln
- e) Repair schedule of electric equipments

4 sets of non-power compensator were added to motor of rolls. 1 set of non-power compensator is added to mixer and extruder apiece. 2 sets of transducer were added to exhaust blower.

2. Order, renovation, installation and commissioning of the process equipments and electric equipments listed in Form 12 was completed. All the equipments are running well (☆ indicates the equipment or item invested by UNIDO subsidy fund).

| No. | Name | Type/Model | Unit | Quantity | Remark |
|-----|--|------------|------|----------|--------|
| 1 | Excavator | W-4 | Set | 1 | |
| 2 | High-speed fine rolls | Φ800×600 | Set | 1 | |
| 3 | Cinder crusher | STS865 | Set | 1 | |
| 4 | Non-power compensator for mills | WMJ series | Set | 4 | |
| 5 | Non-power compensator for mixer | WMJ series | Set | 1 | |
| 6 | Non-power compensator for Type 45/40 vacuum extruder | WMJ series | Set | 1 | |
| 7 | Vertical column cutter | QJ1100 | Set | 1 | |
| 8 | Die | 1 | Set | 2 | \$ |
| 9 | Transducer for exhaust blower | SL-10 | Set | 2 | |
| 10 | Measure apparatus of caloric value | Type NW | Set | 1 | |

Form 12 List of equipments

In addition, drainage system renovation, old annular kiln renovation and commissioning of new annular kiln were completed. Fee for drainage system renovation was invested by UNIDO subsidy fund.

3. Comparison of the technical index between renovation before and after

Through running for three months, it is determined to saving 633.96 tce per year, and to reduce gas emissions of CO_2 1,580.46 tons per year. Comparison of the technical index between renovation before and after sees form 13.

Form 13 Comparison of the technical index between renovation before and after

| Name | Unit | Before | After |
|-------------------------|--|--------|-------|
| Output | (Common brick equivalent) × 10,000 bricks/year | 2,000 | 3,000 |
| Rate of acceptance | % | 77 | 87 |
| Coal consumption | kg ce/10,000 bricks (Common brick equivalent) | 1,250 | 1,056 |
| Electricity consumption | kg ce/10,000 bricks (Common brick equivalent) | 70 | 54 |

4.3.7 Shenwei Wall materials Plant, Xi'an

- 1. Completed content of engineer design
 - a) Process layout drawing
 - b) Installation drawing of hi-speed fine rolls
 - c) Installation drawing of cinder crusher
 - d) Working drawing of new 24 chambers annular kiln
 - e) Repair schedule of the original annular kiln
 - f) Renovation schedule of electric equipments
 2 sets of transducers were added to kiln blower. 1 set of non-power compensator was added to motor of extruder.
 - g) Renovation schedule of the drainage system of green yard.
- 2. Order, renovation, installation and commissioning of the process equipments and electric equipments listed in Form 14 was completed. All the equipments are running well (α indicates the equipment or item invested by UNIDO subsidy fund).

| No. | Name | Type/Model | Unit | Quantity | Remark |
|-----|--|------------|----------------|----------|--------|
| 1 | Remove and rebuild annular kiln | 24chambers | Set | 1 | |
| 2 | Repair and seal kiln | 24chambers | Set | 1 | |
| 3 | Green brick yard renovation | 30,000 | m ² | 30,000 | |
| 4 | High-speed fine rolls | ф 800×600 | Set | 1 | |
| 5 | Measure apparatus of caloric value | Type NW | Set | 1 | |
| 6 | Cinder crusher | 600×630 | Set | 2 | |
| 7 | Vertical column cutter | QT107 | Set | 1 | |
| 8 | Non-power compensator controlling system | WMJ series | Set | 1. | |
| 9 | Model, die, core | JZK45/40 | Set | 2 | |
| 10 | Transducer for blower | WMJ series | Set | 2 | 0 |

Form14 List of equipments

- Comparison of the technical index between renovation before and after Through running for three months, it is determined that the renovation production line reaches the following targets.
 - a) The output is improved by 25 percent. The rate of acceptance is improved by 10 percent.
 - b) The comprehensive energy conservation is 691.81 tce yearly.
 - c) The gas emission of CO_2 is reduced 1,724.68 tons.

Comparison of the technical index between renovation before and after sees form 15.

| Name | | Unit | | After |
|-------------------------|------------------------|--|----|-------|
| Output | | (Common brick equivalent) × 10,000 bricks/year | | 3,500 |
| Rate of acceptance | | % | 83 | 93 |
| Perforation | Fired perforated brick | % | | 25 |
| | Fired hollow brick | % | 33 | 37 |
| Coal consumption | | kg ce/10,000 bricks (Common brick equivalent) | | 950 |
| Electricity consumption | | kg ce/10,000 bricks (Common brick equivalent) | | 63 |

Form 15 Comparison of the technical index between renovation before and after

4.3.8 Shenlu New Type Building Materials Co. Ltd,shaanxi

- 1. Completed contents of engineer design
 - a) Process renovation (Process layout drawing)
 - b) Installation drawing of the following equipments
 - l) Cinder crusher
 - ii) Type ϕ 800 × 600 hi-speed fine rolls
 - iii) Type JZK50/45 vacuum extruder
 - c) Repair scheme of original annular kiln was completed. The leak of kiln was repaired. Technology of advanced heat preservation and energy saving was adopted, including using the heat preservation materials such as rock cotton, cinder and vermiculite to airproof the kiln. The kiln roof was removed and rebuilt. The chamber's wickets were repaired. Temperature tester was added for annular kiln.
 - d) Repair schedule of electric equipments
 Transducer controlling system was added to kiln blower. Non-power compensator was added to extruder. Electricity conversation compensator was adopted.
- 2. Order, renovation, installation and commissioning of the process equipments and electric equipments listed in Form 16 was completed. All the equipments are running well (☆ indicates the equipment or item invested by UNIDO subsidy fund).

| No. | Name | Type/Model | Unit | Quantity | Remark |
|-----|-------------------------------------|--------------------|------|----------|--------|
| 1 | Excavator | Dong fang hong -70 | Set | 1 | |
| 2 | Hi-speed fine rolls | \$800×600 | Set | 1 | |
| 3 | Cinder crusher | 600×630 | Set | 1 | |
| 4 | Vacuum extruder | JZK50/45-3.0 | Set | 1 | |
| 5 | Vertical column and green cutter | QT2000 | Set | 1 | |
| 6 | Temperature tester for annular kiln | 1200°C | Set | 1 | |
| 7 | Damp and fire core cover | / | Set | 38 | |
| 8 | Blower | ZFJ-8 | Set | 1 | |
| 9 | Transducer for blower of kiln | WMJ series | Set | 1 | |
| 10 | Non-power compensator for extruder | WMJ series | Set | 1 | |
| 11 | Model, die, core | JZK50/45-3.0 | Set | 1 | ☆ |

Form 16 List of equipments

In addition, kiln roof was removed and rebuilt. Damp and fire core cover was changed. Fee for removing and rebuilding kiln roof was invested by UNIDO subsidy fund.

3. Comparison of the technical index between renovation before and after

Through running for three months, it is determined to saving 620.96 tce per year, and to reduce gas emissions of CO_2 1,548.04 tons per year. Comparison of the technical index between renovation before and after sees form 17.

| Index | Unit | Before | After |
|-------------------------|---|--------------|-------|
| Output | (Common brick equivalent) ×10,000 bricks/year | 2,200 | 3,000 |
| Coal consumption | kg ce/10,000 bricks (Common brick equivalent) | 1,200 | 1,020 |
| Electricity consumption | kg ce/10,000 bricks (Common brick equivalent) | 80 | 56 |
| Rate of acceptance | % | 83 | 93 |
| Perforation | % | 22~23, 33~35 | 26,45 |

Form 17 Comparison of the technical index between renovation before and after

4.3.9 Shenlufang No.5, Brick Plant, Baqiao District, Xi'an

- 1. Completed content of engineer design
 - a) Process layout drawing
 - b) Installation drawing of the following equipments
 - i) Type ϕ 800 \times 600 hi-speed fine rolls
 - ii) Type SJJ240-36 mixing extruder
 - iii) Cinder crusher
 - iiii) Type JZK50/45-3.0 vacuum extruder
 - c) The repair schedule for the original 38 chambers annular kiln was completed. Temperature tester was added to annular kiln.
 - d) Repair schedule of electric equipments

1 set of transducer was added to kiln blower. 3 sets of electricity conversation compensator were added to extruder.

2. Order, renovation, installation and commissioning of the process equipments and electric equipments listed in Form 18 was completed. All the equipments are running well (% indicates the equipment or item invested by UNIDO subsidy fund).

| No. | Name | Type/Model | Unit | Quantity | Remark |
|-----|----------------------------------|------------|------|----------|--------|
| 1 | High-speed fine rolls | ф800×600 | Set | 1 | |
| 2 | Cinder crusher | 600×630 | Set | 1 | |
| 3 | Vertical column and green cutter | QT2000 | Set | 1 | |

Form 18 List of equipments

| No. | Name | Type/Model | Unit | Quantity | Remark |
|-----|-------------------------------------|--------------|------|----------|--------|
| 4 | Mixing extruder | SJJ240-36 | Set | 1 | |
| 5 | Vacuum extruder | JZK50/45-3.0 | Set | 1 | |
| 6 | Temperature tester for annular kiln | 1200□ | Set | 1 | |
| 7 | Damp | 38 chambers | Set | 38 | |
| 8 | Blower | ZFJ-8 | Set | 1 | |
| 9 | Electricity saving compensator | WMJ series | Set | 3 | |
| 10 | Model, die, core | JZK50/45-3.0 | Set | 1 | \$ |

In addition, kiln roof was removed and rebuilt. Damp and fire core cover was changed. Fee for removing and rebuilding kiln roof was invested by UNIDO subsidy fund.

3. Comparison of the technical index between renovation before and after

Through running for three months, it is determined to saving 604.65 tce per year, and to reduce gas emissions of CO_2 1,507.39 tons per year. Comparison of the technical index between renovation before and after sees form 19.

| Form 19 | Comparison | of the technical | index between | renovation | before and | after |
|---------|------------|------------------|---------------|------------|------------|-------|
|---------|------------|------------------|---------------|------------|------------|-------|

| Index | Unit | Before | After |
|-------------------------|--|--------------|-------|
| Output | (Common brick equivalent) × 10,000 bricks/year | 2,600 | 2,700 |
| Coal consumption | kg ce/10,000 bricks (Common brick equivalent) | 1,100 | 890 |
| Electricity consumption | kg ce/10,000 bricks (Common brick equivalent) | 70 | 56 |
| Rate of acceptance | % | 83 | 93 |
| Perforation | % | 22~23, 33~35 | 26,45 |

4.3.10 Shijiadao Hollow Brick Plant

- 1. Completed content of engineer design
 - a) Process layout drawing
 - b) Working drawing of annular kiln
 - c) Installation drawing of hi-speed fine rolls
 - d) Installation drawing of mixing extruder
 - e) Installation drawing of cinder crusher
 - f) Repair schedule of annular kiln and drainage system of green yard
 - g) Renovation schedule of electric equipments
 2 sets of transducers were added to kiln blower. 1 set of non-power compensator was added to extruder.
- 2. Order, renovation, installation and commissioning of the process equipments and electric equipments listed in Form 20 was completed. All the equipments are running well (\Rightarrow indicates the equipment or item invested by UNIDO subsidy fund).

| No. | Name | Type/Model | Unit | Quantity | Remark |
|-----|------------------------------------|-------------|----------------|----------|--------|
| 1 | Repair drainage system | 20,000 | m ² | 20,000 | |
| 2 | Seal the annular kiln | 32 chambers | Set | 1 | ☆ |
| 3 | Rebuild the annular kiln | 32 chambers | Set | 1 | |
| 4 | High-speed fine rolls | Φ 800×600 | Set | 1 | |
| 5 | Double-shaft mixer | SJ3000 | Set | 1 | |
| 6 | Transducer for blower | WMJ series | Set | 2 | ☆ |
| 7 | Non-power compensator for extruder | WMJ series | Set | 1 | ☆ |
| 8 | Vertical column cutter | QT107 | Set | 1 | |
| 9 | Model, die, core | JZK45/40 | Set | 2 | |
| 10 | Measure apparatus of caloric value | Type NW | Set | 1 | |
| 11 | Cinder crusher | 600×630 | Set | 1 | |

Form 20 List of equipments

3. Comparison of the technical index between renovation before and after

Through running for three months, it is determined that the renovation production line reaches the following targets.

- a) The output is improved by 27 percent. The rate of acceptance is improved by 12 percent.
- b) The comprehensive energy conservation is 604.76 tce yearly.
- c) The gas emission of CO_2 is reduced 1,507.67 tons yearly.

Comparison of the technical index between renovation before and after sees form 21.

Form 21 Comparison of the technical index between renovation before and after

| Name | | Unit | Before | After |
|-------------------------|------------------------|---|--------|-------|
| Output | | (Common brick equivalent) ×10,000 bricks/year | 2,200 | 2,600 |
| Rate of accep | tance | % | 80 | 92 |
| Destantion | Fired perforated brick | % | 22~23 | 25 |
| Perforation | Fired hollow brick | % | 33~35 | -37 |
| Coal consum | ption | kg ce/10,000 bricks (Common brick equivalent) | 1,200 | 980 |
| Electricity consumption | | kg ce/10,000 bricks (Common brick equivalent) | 65 | 57 |

4.3.11 Xi'an Oriental Hollow Brick Plant

- 1. Completed content of engineer design
 - a) Process layout drawing
 - b) Installation drawing of cinder crusher
 - c) Installation drawing of mixing extruder
 - d) Installation drawing of rolls
 - e) Working drawing of new 24 chambers annular kiln
 - f) Repair schedule of electric equipments
 - 4 sets of non-power compensators were added to motor of rolls. 1 set of non-power

compensator was added to mixing extruder and extruder apiece. 2 sets of transducer were added to kiln blower.

- g) Repair schedule for the original annular kiln
- 2. Order, renovation, installation and commissioning of the process equipments and electric equipments listed in Form 22 was completed. All the equipments are running well (% indicates the equipment or item invested by UNIDO subsidy fund).

| No. | Name | Type/Model | Unit | Quantity | Remark |
|-----|---|------------|------|----------|--------|
| 1 | Excavator | W-3 | Set | 1 . | |
| 2 | Cinder Crusher | 600×630 | Set | 1 | |
| 3 | Non-power compensator for motor of mills | WMJ | Set | 4 | |
| 4 | Non-power compensator for motor of mixer | WMJ | Set | 1 | |
| 5 | Non-power compensator for motor of Type 45/40 vacuum extruder | WMJ | Set | 1 | |
| 6 | Vertical column cutter | QT2000 | Set | 1 | ☆ |
| 7 | Die | 1 | Set | 2 | ☆ |
| 8 | Transducer for exhaust blower | SL-10 | Set | 2 | \$ |
| 9 | Mills renovation | DW202 | Set | 1 | ☆ |
| 10 | Mixer renovation | DW302 | Set | 1 | ☆ |
| 11 | Measure apparatus of caloric value | Type NW | Set | 1 | |

Form 22 List of equipments

In addition, drainage system of the green yard and annular kiln was renovated. The new annular kiln was commissioned.

3. Comparison of the technical index between renovation before and after

Through running for three months, it is determined to saving 696.95 tce per year, and to reduce gas emissions of CO_2 1,737.50 tons per year. Comparison of the technical index between renovation before and after sees form 23.

Form 23 Comparison of the technical index between renovation before and after

| Name Unit | | Before | After |
|-------------------------|---|--------|------------|
| Output | (Common brick equivalent) ×10,000 bricks/year | 2,490 | 4,000 |
| Rate of acceptance | % | 78 | 8 8 |
| Coal consumption | kg ce/10,000 bricks (Common brick equivalent) | 1,200 | 1,050 |
| Electricity consumption | kg ce/10,000 bricks (Common brick equivalent) | 70 | 51 |

4.3.12 Chang'an Xibei Building Plant

- 1. Completed content of engineer design
 - a) Process layout drawing

- b) Installation drawing of the following equipments
 - i) Type ϕ 800 \times 600 hi-speed fine rolls
 - ii) Type SJ240-36 strong strength mixer
 - iii) Cinder crusher
- c) Drawing for new 24 chambers annular kiln production line
 i) General plat drawing of 24 chambers annular kiln
 ii) Section drawing
- d) Repair schedule for the original 22 chambers annular kiln
- e) Repair schedule of electric equipments
 2 sets of transducers were added to kiln blower. 1 set of non-power compensator was added to motor of extruder and mixer apiece. 4 sets of non-power compensators were added to motor of rolls.
- 2. Order, renovation, installation and commissioning of the process equipments and electric equipments listed in Form 24 was completed. All the equipments are running well (Δ indicates the equipment or item invested by UNIDO subsidy fund).

| No. | Name | Type/Model | Unit | Quantity | Remark |
|-----|---|--------------------|------|----------|--------|
| 1 | Bulldozer | Dong fang hong -70 | Set | 1 | |
| 2 | Strong strength mixer | SJ240-36 | Set | 1 | |
| 3 | High-speed fine rolls | ф 800×600 | Set | 1 | |
| 4 | Cinder crusher | 400×600 | Set | l | * |
| 5 | Non-power compensator for motor of mills | WMJ series | Set | 4 | |
| 6 | Non-power compensator for motor of mixer | WMJ series | Set | 1 | |
| 7 | Non-power compensator system for 45/40 extruder | WMJ series | Set | 1 | |
| 8 | Vertical column cutter | QT2000 | Set | 1 | ☆ |
| 9 | Measure apparatus of caloric value | Type NW | Set | 1 | |
| 10 | Transducer for exhaust blower | WMJ series | Set | 2 | |
| 11 | Die renovation | JZK45/40 | Set | 2 | |

Form 24 List of equipments

In addition, roof of the old 22 chambers kiln was removed and rebuilt. Drainage system of the green yard was renovated. Fee for removing and rebuilding the kiln roof was invested by UNIDO subsidy fund.

 Comparison of the technical index between renovation before and after Through running for three months, it is determined to saving 800.46 tce per year, and to reduce gas emissions of CO₂ 1,995.55 tons per year. Comparison of the technical index between renovation before and after sees form 25.

| Index | Unit | Before | After |
|-------------------------|---|--------------|--------|
| Output | (Common brick equivalent) \times 10,000 bricks/year | 2,400 | 3,000 |
| Coal consumption | kg ce/10,000 bricks (Common brick equivalent) | 1,150 | 900 |
| Electricity consumption | kg ce/10,000 bricks (Common brick equivalent) | 70 | 54 |
| Rate of acceptance | % | 78 | 92 |
| Perforation | % | 22~23, 33~35 | 26, 40 |

Form 25 Comparison of the technical index between renovation before and after

4.3.13 Xiangfa New Building Materials Co., Xi'an

- 1. Completed content of engineer design
 - a) Process layout drawing
 - b) Installation drawing of Type ϕ 800 \times 600 hi-speed fine rolls
 - c) Installation drawing of cinder crusher
 - d) Working drawing of new 28 chambers annular kiln
 - e) Repair schedule of electric equipments
 2 sets of transducers were added to kiln blower. 1 set of non-power compensator was added to extruder.
- 2. Order, renovation, installation and commissioning of the process equipments and electric equipments listed in Form 26 was completed. All the equipments are running well (\Rightarrow indicates the equipment or item invested by UNIDO subsidy fund).

| No. | Name | Type/Model | Unit | Quantity | Remark |
|-----|---|------------|------|----------|--------|
| 1 | Excavator | W-3 | Set | 1 | ☆ |
| 2 | High-speed fine rolls | Φ800×600 | Set | 1 | |
| 3 | Cinder crusher | STS860 | Set | 1 | i |
| 4 | Non-power compensator for motor of Type 45/40 vacuum extruder | WMJ | Set | 1 | |
| 5 | Vertical column cutter | QT2000 | Set | 1 | |
| 6 | Die | 1 | Set | 2 | |
| 7 | Transducer for exhaust blower | XCJ000 | Set | 2 | ☆ |
| 8 | Measure apparatus of caloric value | Type NW | Set | 1 | |

Form 26 List of equipments

In addition, drainage system renovation, and construction and commissioning of new annular kiln were completed.

3. Comparison of the technical index between renovation before and after

Through running for three months, it is determined to saving 628.15 tce per year, and to reduce gas emissions of CO_2 1,565.97 tons per year. Comparison of the technical index between renovation before and after sees form 27.

| Name | Unit | Before | After |
|-------------------------|--|--------|-------|
| Output | (Common brick equivalent) × 10,000 bricks/year | 2,300 | 2,600 |
| Rate of acceptance | % | 83 | 93 |
| Coal consumption | kg ce/10,000 bricks (Common brick equivalent) | 1,200 | 970 |
| Electricity consumption | kg ce/10,000 bricks (Common brick equivalent) | 70 | 62 |

Form 27 Comparison of the technical index between renovation before and after

4.3.14 Hongqi St. Xiangyanggou Brick Plant, Baqiao District, Xi'an

- 1. Completed content of engineer design
 - a) Process layout drawing
 - b) Installation drawing of hi-speed fine rolls
 - c) Installation drawing of mixing extruder
 - d) Installation drawing of two-stage vacuum extruder
 - e) Installation drawing of cinder crusher
 - f) Repair schedule of annular kiln and drainage system of green yard
 - g) Renovation schedule of electric equipments

1 set of transducer controlling system was added to kiln blower. 1 set of non-power compensator controlling system was added to extruder.

2. Order, renovation, installation and commissioning of the process equipments and electric equipments listed in Form 28 was completed. All the equipments are running well (% indicates the equipment or item invested by UNIDO subsidy fund).

| No. | Name | Type/Model | Unit | Quantity | Remark |
|-----|--|-------------|----------------|----------|--------|
| 1 | Repair drainage system | 27,000 | m ² | 27,000 | |
| 2 | Seal the kiln | 40 chambers | Set | 1 | ☆ |
| 3 | High-speed fine rolls | ф 800×600 | Set | 1 | • |
| 4 | Strong strength mixing extruder | SJ240-36 | Set | 1 | |
| 5 | Two-stage vacuum extruder | JZK50/45 | Set | 1 | |
| 6 | Loader | Jiande502 | Set | 1 | |
| 7 | Energy conservation blower | ZFJ-8 | Set | 1 | ☆ |
| 8 | Non-power compensator system | WMJ series | Set | 1 | \$ |
| 9 | Transducer controlling system for blower of kiln | WMJ series | Set | 1 | |
| 10 | Model, die, core | JZK50/45 | Set | 2 | |
| 11 | Vertical column cutter | QT107 | Set | 1 | |
| 12 | Measure apparatus of caloric value | Type NW | Set | 1 | |
| 13 | Cinder crusher | 600×630 | Set | 1 | |

Form 28 List of equipments

 Comparison of the technical index between renovation before and after Through running for three months, it is determined that the renovation production line reaches the following targets.

- a) The output is improved by 12 percent. The rate of acceptance is improved by 12 percent.
- b) The comprehensive energy conservation is 609.29 tce yearly.
- c) The gas emission of CO₂ is reduced 1518.95 tons yearly.

Comparison of the technical index between renovation before and after sees form 29.

Form 29 Comparison of the technical index between renovation before and after

| Name | | Unit | Before | After |
|-------------------------|------------------------|---|--------|-------|
| | Output | (Common brick equivalent) ×10,000 bricks/year | 2,500 | 2,800 |
| Ra | ate of acceptance | % | 80 | 92 |
| Perforation | Fired perforated brick | % | 22~23 | 25 |
| | Fired hollow brick | % | 33~35 | 37 |
| c | oal consumption | kg ce/10,000 bricks (Common brick equivalent) | 1,150 | 940 |
| Electricity consumption | | kg ce/10,000 bricks (Common brick equivalent) | 63 | 56 |

4.3.15 Xinyue Industry and Trade Co. Ltd.

- 1. Completed content of engineer design
 - a) Process layout drawing
 - b) Installation drawing of Type ϕ 800 \times 600 hi-speed fine rolls
 - c) Installation drawing of Type JZK45/40 vacuum extruder
 - d) Renovation schedule of electric equipments

4 sets of non-power compensator were added to the motor of rolls. 1 set of non-power compensator was added to mixer and extruder apiece. 2 sets of transducer were added to kiln blower.

- e) Repair schedule for the original annular kiln
- 2. Order, renovation, installation and commissioning of the process equipments and electric equipments listed in Form 30 was completed. All the equipments are running well (☆ indicates the equipment or item invested by UNIDO subsidy fund).

| No. | Name | Type/Model | Unit | Quantity | Remark |
|-----|--|------------|------|----------|--------|
| 1 | Excavator | W-3 | Set | 1 | |
| 2 | High-speed fine rolls | Φ800×600 | Set | 1 | ☆ |
| 3 | Cinder crusher | STS860 | Set | 1 | |
| 4 | Two-stage vacuum extruder | JZK45/40 | Set | 1 | |
| 5 | Non-power compensator for mills | GGD | Set | 4 | |
| 6 | Non-power compensator for mixer | GGD | Set | 1 | |
| 7 | Non-power compensator for Type 45/40 vacuum extruder | GGD | Set | 1 | |
| 8 | Transducer for exhaust blower | SL-10 | Set | 2 | ☆ |
| 9 | Measure apparatus of caloric value | Type NW | Set | 1 | |

| Form 30 | List o | of equi | pments |
|---------|--------|---------|--------|
|---------|--------|---------|--------|

In addition, drainage system renovation, kiln renovation and commissioning were completed.

3. Comparison of the technical index between renovation before and after

Through running for three months, it is determined to saving 641.64 tce per year, and to reduce gas emissions of CO₂ 1,599.61 tons per year. Comparison of the technical index between renovation before and after sees form 31.

| Name | Unit | Before | After |
|-------------------------|---|--------|-------|
| Output | (Common brick equivalent)×10,000 bricks/year | 3,400 | 4,500 |
| Rate of acceptance | % | 80 | 90 |
| Coal consumption | kg ce/10,000 bricks (Common brick equivalent) | 1,230 | 1,097 |
| Electricity consumption | kg ce/10,000 bricks (Common brick equivalent) | 70 | 62 |

| Form 51 Comparison of the technical index between renovation before and after |
|---|
|---|

Appendix 1:

Certificate of Acceptance of Hollow Brick Plant, Baling Town, Baqiao District, Xi'an

Xi'an Research and Design Institute of Wall & Roof Materials completed the prescriptive task of the UNIDO Contract and TOR of the project entitled "Energy Conservation and GHG Emissions Reduction in Chinese TVEs (Phase II) – Brick Sector Replication Project for Energy Efficiency (1) – Technical Renovation for Hollow Brick Plant, Baling Town, Baqiao District, Xi'an". The energy conversation technical renovation of our Plant achieves the anticipated target.

A) Xi'an Research and Design Institute of Wall & Roof Materials completed the following technical design for our Plant.

1. Completed process renovation (process layout drawing).

- 2. Completed installation drawing of newly added equipments
- 2.1 Cinder crusher
- 2.2 Type Φ 800×600 high speed fine rolls
- 2.3 Type JZK50/45-3.0 vacuum extruder

3. Proposed repair scheme of original annular kiln. Repaired the kiln body where gas leak off. Adopted advanced heat preservation and energy saving technology including using the heat preservation materials such as rock cotton, cinder and vermiculite to airproof the kiln. Removed kiln top and rebuilt it. Repaired the chamber's wickets. Temperature tester was added for annular kiln.

4. Proposed renovation scheme of electric equipment. Transducer controlling system was added for motor of kiln blower. Non-power compensator controlling system was added for extruder, high speed fine rolls and double shaft mixer. Electricity saving compensator was adopted on-site.

B) Completed order, renovation, installation and test-running of the process equipments and electric equipments listed in Form 1. All the equipments is running well (% indicates the equipment or item invested by UNIDO subsidy fund).

| _ | Form 1 Equipment List of Order, Re | novat | tion, In | stal | llation and | d Test-ra | innin | g - |
|---|------------------------------------|-------|----------|------|-------------|-----------|-------|-----|
| | | - | | | | | | |

| No. | Name | Type/Model | Unit | Quantity | Remark |
|-----|---|--------------|---------|---------------|--------|
| 1 | Excavator | ZL30PG | Set | 1 | |
| 2 | Hi-speed fine rolls | Φ 800×600 | Set | ,\1 - | |
| 3 | Cinder Crusher | 600×630 | Set | <u> ' </u> 1 | |
| 4 | Non-power compensator for motor of mills | WMJ series | Set Set | 4 | ☆ |
| 5 | Non-power compensator for motor of mixer | WMJ series | Set | 1 | ☆ |
| 6 | Non-power compensator for motor of type 45/40 vacuum extruder | WMJ series | Set | 1 | ☆ |
| 7 | Vacuum extruder | JZK50/45-3.0 | Set | 1 | |
| 8 | Vertical column cutter | QT107 | Set | 1 | |
| 9 | Measure apparatus of caloric value | Type NW | Set | 1 | |
| 10 | Transducer for exhaust blower | WMJ series | Set | 1 | \$ |
| 11 | Die renovation | JZK50/45-3.0 | Set | 2 | |

1

In addition, the Institute completed drainage system renovation engineer and removing kiln top and rebuilding it. Fee for installing and test-running the equipments listed in form 1 and drainage system renovation was invested by UNIDO subsidy fund.

C) Completed technical and management technology training of relevant post

During the construction, the Institute developed technical and management training for the personnel in relevant working post, helped our Plant set up suitable management system, provided full and detailed consultative and technical service.

After the energy conversation technical renovation of the original production line completed by Xi'an Research and Design Institute of Wall & Roof Materials and through running for three months, the renovation of our Plant has reached anticipated goals. It is determined to realize saving 707 tons of coal equivalent (tce) per year, and to reduce gas emissions of CO_2 1762. 55 tons per year.

Comparing between renovation before and after see form 2.

| Index | Unit | Before | After |
|-------------------------|--|--------------|--------|
| Output | (Common brick equivalent) × 10,000 bricks/year | 24,00 | 2,688 |
| Coal consumption | Kg ce /10,000 bricks (Common brick equivalent) | 1,250 | 1,000 |
| Electricity consumption | Kg ce /10,000 bricks (Common brick equivalent) | 70 | 54 |
| Rate of acceptance | % | 78 | 90 |
| Perforation | % | 22~23, 33~35 | 25, 45 |

Form 2 Comparing Between Renovation Before and After

Hollow Brick Plant, Baling Town, Baqiao District, Xi'an

By JA 2 3 Date 2006. 06. 07

Xi'an Research and Design Institute of Wall & Roof Materials

Bv 2006. Date

Agriculture Ministry of China Project Management Office

By Date

Appendix 2:

Certificate of Acceptance of Hongqi New Type Building Materials co., Xi'an

Xi'an Research and Design Institute of Wall & Roof Materials completed the prescriptive task of the UNIDO Contract and TOR of the project entitled "Energy Conservation and GHG Emissions Reduction in Chinese TVEs (Phase II) – Brick Sector Replication Project for Energy Efficiency (1) – Technical Renovation for Hongqi New Type Building Materials co., Xi'an". The energy conversation technical renovation of our Plant achieves the anticipated target.

A) Xi'an Research and Design Institute of Wall & Roof Materials completed the following technical renovation for our Plant.

1. Annular kiln renovation

1.1 Leak of the 24 chambers kiln body was very serious because the brick of the kiln body was destroyed badly. So removed the kiln body and rebuilt it, but kept the basis of the kiln.

1.2 Use asbestos rope and ceramic cotton to airproof the other 24 chambers annular kiln.

2. Green brick yard renovation

Renovated the original green brick yard of this plant. Used fired hollow brick to make hack and increased the height of the hack. The hack width is 0.6m, passage between hack is 1.4m, and hack height is 0.15m. The area is $30,000m^2$.

3. Proposed renovation scheme of electric equipment

1 set of non-power compensator controlling system was added for two-stage vacuum extruder. Two sets of transducer were added for energy conversation blower.

B) Completed order, renovation, installation and test-running of the process equipments and electric equipments listed in Form 1. All the equipments is running well (% indicates the equipment or item invested by UNIDO subsidy fund).

| No. | Name | Type/Model | Unit | Quantity | Remark |
|--------|--|--------------------|----------------------|------------------|--------|
| · _1 · | Repair annular kiln | 24 chambers | Set | l | |
| 2 | Repair green brick yard | 35,000 | m ³ | 35,000 | . ☆ |
| 3 | High-speed fine rolls | ф 8 00×600 | Set | 1 | |
| 4 | Bulldozer and accessory | Dong Fang Hong -70 | Set | 1. | 1 |
| 5 | Energy conservation blower and accessory | ZFJ-8 | Set | 2 | ☆ |
| - б | Accessory | / | - ³ Set ∛ | - 5 [.] | |
| 7 | Damp | 1 | Set | 24 | ☆ |
| 8 | Non-power compensator | WMJ series | Set | 1 | ☆ |
| 9 | Transducer for blower | WMJ series | Set | 1 | ☆ |
| 10 | Two-stage vacuum extruder | JZK50/45-3.0 | Set | 1 | |
| 11 | Vertical column cutter | QT107 | 'Set | n 1 | |
| 12 | Temperature tester | 1200°C | Set | 1 | |

Form 1 Equipment List of Order, Renovation, Installation and Test-running

C) Completed technical and management technology training of relevant post

During the construction, the Institute developed technical and management training for the personnel in relevant working post, helped our Plant set up suitable management system, provided full and detailed consultative and technical service.

D) Result of the technical renovation

After running for 3 months, the energy conversation technical renovation of the original production line of our Plant completed by Xi'an Research and Design Institute of Wall & Roof Materials has reached following goals.

1. The output is increased 5% and the rate of acceptance is increased 12%.

2. Save 632.98 tons of coal equivalent (tce) per year.

3. Synthetically reduce gas emissions of CO₂ 1578.03 tons per year.

Comparing between renovation before and after see form 2.

| Form 2 | Comparing Between Renovation Before and After |
|--------|---|
| | |
| | |

| | Name | Unit | Before | After |
|-------------|------------------------|--|--------|-------|
| | Output | (Common brick equivalent) × 10,000 bricks/year | 4,400 | 4,600 |
| Rat | e of acceptance | % | 80 | 92 |
| Perforation | Fired perforated brick | % | 23 | 25 |
| | Fired hollow brick | % | 33 | 37 |
| Coa | al consumption | kg ce /10,000 bricks (Common brick equivalent) | 1,100 | 970 |
| Electri | icity consumption | kg ce/10,000 bricks (Common brick equivalent) | 61 | 54 |

Hongqi New Type Building Materials co., Xi'an

By <u>473</u> Date <u>2006/264078</u>

Xi'an Research and Design Institute of Wall & Roof Materials

By Date _____6.6.8

Agriculture Ministry of China Project Management Office

By 7006 Date _____

Appendix 3:

Certificate of Acceptance of Hongfang Building Materials Co.

Xi'an Research and Design Institute of Wall & Roof Materials completed the prescriptive task of the UNIDO Contract and TOR of the project entitled "Energy Conservation and GHG Emissions Reduction in Chinese TVEs (Phase II) – Brick Sector Replication Project for Energy Efficiency (1) — Technical Renovation for Hongfang Building Materials Co.". The energy conversation technical renovation of our Plant achieves the anticipated target.

A) Xi'an Research and Design Institute of Wall & Roof Materials completed the following technical design for our Plant.

1. Completed process renovation (process layout drawing).

2. Completed installation drawing of newly added equipments

- 2.1 Cinder crusher
- 2.2 Type Φ 800×600 high speed fine rolls
- 2.3 Type SJJ240-36 mixing extruder

3. Proposed repair scheme of original annular kiln. Repaired the kiln body where gas leak off. Adopted advanced heat preservation and energy saving technology including using the heat preservation materials such as rock cotton, cinder and vermiculite to airproof the kiln. Removed kiln top and rebuilt it. Repaired the chamber's wickets. Temperature tester was added for annular kiln.

4. Proposed renovation scheme of electric equipment. Transducer was added for motor of kiln blower. Non-power compensator controlling system was added for extruder, hi-speed fine rolls and mixing extruder. Electricity saving compensator on-site was adopted.

B) Completed order, renovation, installation and test-running of the process equipments and electric equipments listed in Form 1. All the equipments is running well (\mathfrak{A} indicates the equipment or item invested by UNIDO subsidy fund).

| No. | Name | Type/Model | Unit | Quantity | Remark |
|-----|--|------------|---------|----------|--------|
| 1 | Excavator | ZL30PG | Set | 1 | |
| 2 | High-speed fine rolls | ф 800×600 | Set | 1 | ☆ |
| 3 | Mixing extruder | SJJ240-36 | Set . | | |
| 4 | Cinder crusher | 600×630 | Set | 111 | |
| 5 | Non-power compensator for mills | WMJ series | Set | 4' | \$ |
| 6 | Non-power compensator for motor of mixer | WMJ series | Set · · | 1 | |
| 7_ | Non-power compensator system for type 45/40 extruder | WMJ series | Set | 1 | |
| 8 | Vertical column cutter | QT2000 | Set | 1 | |
| 9 | Measure apparatus of caloric value | Type NW | Set | 1 | |
| 10 | Transducer for exhaust blower | WMJ series | Set | 1 | |
| 11 | Model, die, core | JZK45/40 | Set | 2 | ☆ |

Form 1 Equipment List of Order, Renovation, Installation and Test-running

In addition, the Institute completed drainage system renovation engineer of the green brick

yard, removing kiln top and rebuilding it, and changing damp and fire hole cover. Fee for changing brake and fire hole cover was invested by UNIDO subsidy fund.

C) Completed technical and management technology training of relevant post

During the construction, the Institute developed technical and management training for the personnel in relevant working post, helped our Plant set up suitable management system, provided full and detailed consultative and technical service.

After the energy conversation technical renovation of the original production line completed by Xi'an Research and Design Institute of Wall & Roof Materials and through running for three months, the renovation of our Plant has reached anticipated goals. It is determined to realize saving 787.19 tons of coal equivalent (tce) per year, and to reduce gas emissions of CO_2 1962. 47 tons per year.

Comparing between renovation before and after see form 2.

| Index | Unit | Before | After |
|-------------------------|--|--------------|-------|
| Output | (Common brick equivalent) × 10,000 bricks/year | 26,00 | 3,000 |
| Coal consumption | kg ce /10,000 bricks (Common brick equivalent) | 1,250 | 1,000 |
| Electricity consumption | kg ce /10,000 bricks (Common brick equivalent) | 70 | 54 |
| Rate of acceptance | % | 78 | 90 |
| Perforation | % | 22~23, 33~35 | 26,40 |

Form 2 Comparing Between Renovation Before and After

Hongfang Building Materials Co.

By <u><u><u></u><u></u><u><u></u><u><u></u><u></u><u></u><u>B</u> Date <u>2006.6.7</u></u></u></u></u>

Xi'an Research and Design Institute of Wall & Roof Materials

By Date 2006.6.8

Agriculture Ministry of China Project Management Office

Joob. 7.7 Bv Date

Appendix 4:

Certificate of Acceptance of Baling Liucun Brick Plant, Baqiao District, Xi'an

Xi'an Research and Design Institute of Wall & Roof Materials completed the prescriptive task of the UNIDO Contract and TOR of the project entitled "Energy Conservation and GHG Emissions Reduction in Chinese TVEs (Phase II) – Brick Sector Replication Project for Energy Efficiency (1) – Technical Renovation for Baling Liucun Brick Plant, Baqiao District, Xi'an". The energy conversation technical renovation of our Plant achieves the anticipated target.

A) Xi'an Research and Design Institute of Wall & Roof Materials completed the following technical renovation for our Plant.

1. Annular kiln renovation

Repaired the body of the current 38 chambers annular kiln. Removed the kiln cover and rebuilt it and airproofed the kiln.

2. Green brick yard renovation

Renovated the original green brick yard of this plant. Used fired hollow brick to make hack and increased the height of the hack. The hack width is 0.6m, passage between hack is 1.4m, and hack height is 0.15m. The area is $35,000m^2$.

3. Proposed renovation scheme of electric equipment

1 set of non-power compensator controlling system was added for two-stage vacuum extruder. 1 set of transducer was added for energy conversation blower.

B) Completed order, renovation, installation and test-running of the process equipments and electric equipments listed in Form 1. All the equipments is running well (\Rightarrow indicates the equipment or item invested by UNIDO subsidy fund).

| No. | Name | Type/Model | Unit | Quantity | Remark |
|------|--|-------------------|----------------|----------|--------|
| 1 | Remove kiln cover and rebuild it | 38 chambers | Set | 71. | ☆ |
| 2 | Drainage system renovation | 35,000 | m ² | 35,000 | |
| 3 | Hi-speed fine rolls | Φ 800×600 | Set | 1 | |
| 4 | Vacuum extruder | JZK45/40 | Set | 1 | |
| 5 | Model, die, core | JZK45/40 | Set | 1 | |
| 6 | Vertical column cutter | QT107 | Set | 1 | \$¢ |
| 7 | Green cutter | YHQ18-425 | Set | 1. | |
| 8 | Bulldozer | Dong Fanghong -70 | Set | · 1 | |
| 9 | Tube | 550mm | Sêt | 2 | |
| . 10 | Gear | M2-5 | Set | 2 | |
| 11 | Non-power compensator controlling system | WMJ series | Set | 1 | ☆ |
| 12 | Energy conservation blower | ZFJ-8 | Set | 1 | ☆ |
| 13 | Measure apparatus of caloric value | Type NW | Set | 1 | ☆ |
| 14 | Temperature tester of annular kiln | 1200°C | Set | 1 | |
| 15 | Transducer for blower | WMJ series | Set | 1 | ☆ |
| 16 | Conveyor | B500 | Set | 5 | |

Form 1 Equipment List of Order, Renovation, Installation and Test-running

C) Completed technical and management technology training of relevant post

During the construction, the Institute developed technical and management training for the personnel in relevant working post, helped our Plant set up suitable management system, provided full and detailed consultative and technical service.

D) Result of the technical renovation

After running for 3 months, the energy conversation technical renovation of the original production line of our Plant completed by Xi'an Research and Design Institute of Wall & Roof Materials has reached following goals.

1. The output is increased 11.7% and the rate of acceptance is increased 10%.

2. Save 611.47 tons of coal equivalent (tce) per year.

3. Synthetically reduce gas emissions of CO_2 1524.40 tons per year.

Comparing between renovation before and after see form 2.

| | Name | Unit | Before | After |
|-------------|------------------------|--|--------|-------|
| | Output | (Common brick equivalent) × 10,000 bricks/year | 2,148 | 2,400 |
| Rat | e of acceptance | % | 83 | 93 |
| | Fired perforated brick | % | 22~23 | 25 |
| Perforation | Fired hollow brick | % | 33~35 | 37 |
| Co | al consumption | kg ce/10,000 bricks (Common brick equivalent) | 1,200 | 950 |
| Electr | icity consumption | kg ce/10,000 bricks (Common brick equivalent) | 71 | 63 |

Form 2 Comparing Between Renovation Before and After

Baling Liucun Brick Plant, Baqiao District, Xi'an

Xi'an Research and Design Institute of Wall & Roof Materials

By _______ Date ______6.6.8.

Agriculture Ministry of China Project Management Office

presti Bv Date _____b. 7.

Appendix 5:

Certificate of Acceptance of Molingmiao Brick Plant

Xi'an Research and Design Institute of Wall & Roof Materials completed the prescriptive task of the UNIDO Contract and TOR of the project entitled "Energy Conservation and GHG Emissions Reduction in Chinese TVEs (Phase II) – Brick Sector Replication Project for Energy Efficiency (1) —Technical Renovation for Molingmiao Brick Plant". The energy conversation technical renovation of our Plant achieves the anticipated target.

A) Xi'an Research and Design Institute of Wall & Roof Materials completed the following technical design for our Plant.

1. Completed process renovation (process layout drawing).

2. Completed installation drawing of newly added equipments

2.1 Type ϕ 800×600 stone-elimination mill crusher

2.2 Type $\phi 800 \times 600$ high speed fine rolls

2.3 Type JZK50/45 vacuum extruder

2.4 Type 3000 double shaft mixer

3. Build a new annular kiln

Completed working drawing of 24 chambers annular kiln. The main indexes of the annular kiln are as follows.

(1) Product: Clay hollow brick, clay perforated brick

(2) Arch model: Half circle arch

(3) Dimension of the chamber: (Width×height): 4.1×2.7m

(4) Number of chamber: 24 chambers

(5) Output daily (×10,000 bricks):: 15 (Ignition in one place)

(6) Degree of interior burning: 90%

(7)Capacity of exhaust emission: 46,000m³/h

4. Proposed repair scheme of original annular kiln. Repaired the kiln body where gas leak off. Adopted advanced heat preservation and energy saving technology including using the heat preservation materials such as rock cotton, cinder and vermiculite to airproof the kiln. Removed kiln top and rebuilt it. Repaired the chamber's wickets. Temperature tester was added for annular kiln. Change the old 24 damps by new type damp.

5. Proposed renovation scheme of electric equipment. Transducer controlling system was added for motor of kiln blower. Non-power compensator controlling system was added for extruder.

B) Completed order, renovation, installation and test-running of the process equipments and electric equipments listed in Form 1. All the equipments is running well (α indicates the equipment or item invested by UNIDO subsidy fund).

| Form 1 Equipment List of Order, Renovation, | Installation and Test-running |
|---|-------------------------------|
|---|-------------------------------|

| No. | Name | Type/Model | Unit | Quantity | Remark |
|-----|--------------------------------|------------|------|----------|--------|
| 1 | Stone-elimination mill crusher | Φ 800×600 | Set | 1 | |
| 2 | Hi-speed fine rolls | Φ 800×600 | Set | 1 | |
| 3 | Double shaft mixer | SJ3000 | Set | 1 | ☆ |
| 4 | Column cutter | QJ1100 | Set | 1 | |
| 5 | Green cutter | YHQ18-425 | Set | 1 | |

| No. | Name | Type/Model | Unit | Quantity | Remark |
|-----|-------------------------------------|------------|------|----------|--------|
| 6 | Two-stage vacuum extruder | JZK50/45 | Set | 1 | |
| 7 | Temperature tester for annular kiln | 1200°C | Set | 1 | |
| 8 | Damp for annular kiln | 1 | Set | 24 | |
| 9. | Blower | ZFJ-8 | Set | 1 | |
| 10 | Non-power compensator for blower | SL-10 | Set | 1 | ☆ |
| 11 | Non-power compensator for | WMJ series | Set | 1 | |

In addition, the Institute completed drainage system renovation engineer, kiln renovation and test running of new annular kiln.

C) Completed technical and management technology training of relevant post

During the construction, the Institute developed technical and management training for the personnel in relevant working post, helped our Plant set up suitable management system, provided full and detailed consultative and technical service.

After the energy conversation technical renovation of the original production line completed by Xi'an Research and Design Institute of Wall & Roof Materials and through running for three months, the renovation of our Plant has reached anticipated goals. It is determined to realize saving 638.83 tons of coal equivalent (tce) per year, and to reduce gas emissions of CO_2 1592. 59 tons per year.

Comparing between renovation before and after see form 2.

Form 2 Comparing Between Renovation Before and After

| No. | Unit | Before | After |
|-----|---|--------------|--------|
| 1 | Output (Common brick equivalent) × 10,000 bricks/year | 2,000 | 3,000 |
| 2 | Coal consumption (kg ce/10,000 bricks (Common brick equivalent) | 1,200 | 1,000 |
| 3 | Rate of acceptance (year, %) | 80 | 92 |
| 4 | Perforation (%) | 22-23, 33-35 | 26, 43 |
| 5 | Electricity consumption (kg ce/10,000 bricks (Common brick equivalent)) | 60 | 52 |

Molingmiao Brick Plant

By Date

Xi'an Research and Design Institute of Wall & Roof Materials By __________ Date ________

Agriculture Ministry of Chings Project Management Office By Date

Appendix 6:

Certificate of Acceptance of Qinling Building Materials Co.

Xi'an Research and Design Institute of Wall & Roof Materials completed the prescriptive task of the UNIDO Contract and TOR of the project entitled "Energy Conservation and GHG Emissions Reduction in Chinese TVEs (Phase II) – Brick Sector Replication Project for Energy Efficiency (1) – Technical Renovation for Qinling Building Materials Co.". The energy conversation technical renovation of our Plant achieves the anticipated target.

A) Xi'an Research and Design Institute of Wall & Roof Materials completed the following technical design for our Plant.

1. Completed process renovation (process layout drawing).

2. Completed installation drawing of newly added equipments

2.1 Type ϕ 800×600 high speed fine rolls

2.2 Cinder crusher

3. Build a new annular kiln

Completed working drawing of 24 chambers annular kiln. The main indexes of the annular kiln are as follows.

(1) Product: Clay hollow brick, clay perforated brick

(2) Arch model: Half circle arch

(3) Dimension of the chamber: (Width×height): 4.1×2.7m

(4) Number of chamber: 24 chambers

(5) Output daily (×10,000 bricks):: 15 (Ignition in one place)

(6) Degree of interior burning: 90%

(7) Capacity of exhaust emission: 46,000m³/h

4. Proposed repair scheme of original annular kiln. Repaired the kiln body where gas leak off. Adopted advanced heat preservation and energy saving technology including using the heat preservative materials such as rock cotton, cinder and vermiculite to airproof the kiln. Removed kiln top and rebuilt it. Repaired the chamber's wickets.

5. Proposed renovation scheme of electric equipment. Transducer controlling system was added for motor of kiln blower. Non-power compensator controlling system was added for mills, mixer and extruder.

B) Completed order, renovation, installation and test-running of the process equipments and electric equipments listed in Form 1. All the equipments is running well ($rac{a}$ indicates the equipment or item invested by UNIDO subsidy fund).

| No. | Name | Type/Model | Unit | Quantity | Remark |
|-----|---------------------------------|------------|------|----------|--------|
| 1 | Excavator | W-4 | Set | 1 | |
| 2 | High-speed fine rolls | Φ 800×600 | Set | 1 | |
| 3 | Cinder crusher | STS865 | Set | 1 | |
| 4 | Non-power compensator for mills | WMJ series | Set | 4 | |
| 5 | Non-power compensator for mixer | WMJ series | Set | 1 | |

Form 1 Equipment List of Order, Renovation, Installation and Test-running

| No. | Name | Type/Model | Unit | Quantity | Remark |
|-----|--|------------|------|----------|--------|
| 6 | Non-power compensator for type 45/40 vacuum extruder | WMJ series | Set | 1 | |
| 7 | Vertical column cutter | QJ1100 | Set | 1 | |
| 8 | Die | / | Set | 2 | ☆ |
| 9 | Transducer for exhaust blower | SL-10 | Set | 2 | |
| 10 | Measure apparatus of caloric value | Type NW | Set | 1 | |

In addition, the Institute completed drainage system renovation, old annular kiln renovation and test running of new annular kiln. Fee for drainage system renovation was invested by UNIDO subsidy fund.

C) Completed technical and management technology training of relevant post

During the construction, the Institute developed technical and management training for the personnel in relevant working post, helped our Plant set up suitable management system, provided full and detailed consultative and technical service.

After the energy conversation technical renovation of the original production line completed by Xi'an Research and Design Institute of Wall & Roof Materials and through running for three months, the renovation of our Plant has reached anticipated goals. It is determined to realize saving 633.96 tons of coal equivalent (tce) per year, and to reduce gas emissions of CO_2 1580.46 tons per year.

Comparing between renovation before and after see form 2.

Form 2 Comparing Between Renovation Before and After

| Name | Unit | Before | After |
|-------------------------|--|--------|-------|
| Output | (Common brick equivalent) × 10,000 bricks/year | 2,000 | 3,000 |
| Rate of acceptance | % | 77 | 87 |
| Coal consumption | kg ce/10,000 bricks (Common brick equivalent) | 1,250 | 1,056 |
| Electricity consumption | kg ce/10,000 bricks (Common brick equivalent) | 70 | 54 |

Qinling Building Materials Co.

By $\underline{EX} = \overline{AV}$ Date 2006, 06, 07

Xi'an Research and Design Institute of Wall & Roof Materials By

Date _____ 2006. 6. 8.

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Appendix 7:

Certificate of Acceptance of Shenwei Wall materials Plant, Xi'an

Xi'an Research and Design Institute of Wall & Roof Materials completed the prescriptive task of the UNIDO Contract and TOR of the project entitled "Energy Conservation and GHG Emissions Reduction in Chinese TVEs (Phase II) – Brick Sector Replication Project for Energy Efficiency (1) – Technical Renovation for Shenwei Wall materials Plant, Xi'an". The energy conversation technical renovation of our Plant achieves the anticipated target.

A) Xi'an Research and Design Institute of Wall & Roof Materials completed the following technical renovation for our Plant.

1. Annular kiln renovation

1.1 Leak of the 24 chambers kiln body was very serious because the brick of the kiln body was destroyed badly. So removed the kiln body and rebuilt it.

1.2 Use asbestos rope and ceramic cotton to airproof the other 24 chambers annular kiln.

2. Green brick yard renovation

Renotated the original green brick yard of this plant. Used hollow brick to make hack and increased the height of the hack. The hack width is 0.6m, passage between hack is 1.4m, and hack height is 0.15m. The area is 30,000m².

3. Proposed renovation scheme of electric equipment

1 set of non-power compensator controlling system was added for extruder. Two sets of transducer were added for energy conversation blower.

B) Completed order, renovation, installation and test-running of the process equipments and electric equipments listed in Form 1. All the equipments is running well (\Rightarrow indicates the equipment or item invested by UNIDO subsidy fund).

| Form 1 Equipment list of order, renovation, installation and | l test-running |
|--|----------------|
|--|----------------|

| • | | | | | ····· |
|-----|--|------------|----------------|----------|--------|
| No. | Name | Type/Model | Unit | Quantity | Remark |
| 1 | Remove and rebuild annular kiln | 24chambers | Set | 1 | · |
| 2 | Repair and seal kiln | 24chambers | Set | 1 | ☆ |
| 3 | Green brick yard renovation | 30,000 | m ² | 30,000 | |
| 4 | High-speed fine rolls | ф800×600 | Set | 1. | |
| 5 | Measure apparatus of caloric value | Type NW | Set | 11 | |
| 6 | Cinder crusher | 600×630 | Set | 2 | |
| 7 | Vertical column cutter | QT107 | Set | 1 | |
| 8 | Non-power compensator controlling system | WMJ series | Set | 1 | ☆ |
| 9 | Model, die, core | JZK45/40 | Set | 2 | |
| 10 | Transducer for blower | WMJ series | Set | · 2 | ☆ |

C) Completed technical and management technology training of relevant post

During the construction, the Institute developed technical and management training for the personnel in relevant working post, helped our Plant set up suitable management system, provided full and detailed consultative and technical service.

D) Result of the technical renovation

After running for 3 months, the energy conversation technical renovation of the original production line of our Plant completed by Xi'an Research and Design Institute of Wall & Roof Materials has reached following goals.

1. The output is increased 25% and the rate of acceptance is increased 10%.

2. Save 691.81 tons of coal equivalent (tce) per year.

3. Synthetically reduce gas emissions of CO₂ 1724.68 tons per year.

Comparing between renovation before and after see form 2.

| | Name | Unit | Before | After |
|---------------------------|--|--|--------|-------|
| | Output | (Common brick equivalent) × 10,000 bricks/year | 2,800 | 3,500 |
| Rate | e of acceptance | % | 83 | 93 |
| Perforation | Fired perforated brick | % | 23 | 25 |
| | Fired hollow brick | % | 33 | 37 |
| Coa | Coal consumptionkg ce/10,000 bricks (Common brick equivalent)1,140 | | 1,140 | 950 |
| Electricity consumption k | | kg ce/10,000 bricks (Common brick equivalent) | 71 | 63 |

Form 2 Comparing Between Renovation Before and After

Shenwei Wall materials Plant, Xi'an

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Xi'an Research and Design Institute of Wall & Roof Materials

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Appendix 8:

Certificate of Acceptance of Shenlu New Type Building Materials Co. Ltd,shaanxi

Xi'an Research and Design Institute of Wall & Roof Materials completed the prescriptive task of the UNIDO Contract and TOR of the project entitled "Energy Conservation and GHG Emissions Reduction in Chinese TVEs (Phase II) – Brick Sector Replication Project for Energy Efficiency (1) – Technical Renovation for Shenlu New Type Building Materials Co. Ltd,shaanxi". The energy conversation technical renovation of our Plant achieves the anticipated target.

A) Xi'an Research and Design Institute of Wall & Roof Materials completed the following technical design for our Plant.

1. Completed process renovation (process layout drawing).

- 2. Completed installation drawing of newly added equipments
- 2.1 Cinder crusher
- 2.2 Type ϕ 800×600 high speed fine rolls
- 2.3 Type JZK50/45 vacuum extruder

3. Proposed repair scheme of original annular kiln. Repaired the kiln body where gas leak off. Adopted advanced heat preservation and energy saving technology including using the heat preservation materials such as rock cotton, cinder and vermiculite to airproof the kiln. Removed kiln top and rebuilt it. Repaired the chamber's wickets. Temperature tester was added for annular kiln.

4. Proposed renovation scheme of electric equipment. Transducer controlling system was added for motor of kiln blower. Non-power compensator controlling system was added for extruder and double shaft mixer. Electricity saving compensator on-site was adopted.

B) Completed order, renovation, installation and test-running of the process equipments and electric equipments listed in Form 1. All the equipments is running well (\Rightarrow indicates the equipment or item invested by UNIDO subsidy fund).

| No. | Name | Type/Model | Unit | Quantity | Remark |
|-----|-------------------------------------|--------------------|------|----------|--------|
| 1 | Excavator | Dong fang hong -70 | Set | 1 | |
| 2 | Hi-speed fine rolls | ф 800×600 | Set | , 1 | |
| 3 | Cinder crusher | 600×630 | Set | 1 | |
| 4 . | Vacuum extruder | JZK50/45-3.0 | Set | 1 | |
| 5 | Vertical column and green cutter | QT2000 | Set | 1 | |
| 6 | Temperature tester for annular kiln | 1200°C | Set | 1 | |
| 7 | Damp and fire hole core | 1 | Set | 38 | |
| 8 | Blower | ZFJ-8 | Set | 1 | |
| 9 | Transducer for blower of kiln | WMJ series | Set | 1 | |
| 10 | Non-power compensator for extruder | WMJ series | Set | 1 | |
| 11 | Model, die, core | JZK50/45-3.0 | Set | 1 | ☆ |

Form 1 Equipment List of Order, Renovation, Installation and Test-running

In addition, the Institute completed removing kiln top and rebuilding it, changing brake and fire hole cover. Fee for removing kiln top and rebuilding it was invested by UNIDO subsidy fund.

C) Completed technical and management technology training of relevant post

During the construction, the Institute developed technical and management training for the personnel in relevant working post, helped our Plant set up suitable management system, provided full and detailed consultative and technical service.

After the energy conversation technical renovation of the original production line completed by Xi'an Research and Design Institute of Wall & Roof Materials and through running for three months, the renovation of our Plant has reached anticipated goals. It was determined to realize saving 620.96 tons of coal equivalent (tce) and reducing gas emissions of CO_2 1548.04 tons per year.

Comparing between renovation before and after see form 2.

| Index | Unit | Before | After |
|-------------------------|--|--------------|--------|
| Output | (Common brick equivalent) × 10,000 bricks/year | 2,200 | 3,000 |
| Coal consumption | kg ce/10,000 bricks (Common brick equivalent) | 1,200 | 1,020 |
| Electricity consumption | kg ce/10,000 bricks (Common brick equivalent) | 80 | 56 |
| Rate of acceptance | % | 83 | 93 |
| Perforation | % | 22~23, 33~35 | 26, 45 |

| Form 2 (| Comparing | Between | Renovation | Before | and A | fter |
|----------|-----------|---------|------------|--------|-------|------|
|----------|-----------|---------|------------|--------|-------|------|

Shenlu New Type Building Materials Co. Ltd, Shaanxi

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Xi'an Research and Design Institute of Wall & Roof Materials

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Agriculture Ministry of China Project Management Office

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Appendix 9:

Certificate of Acceptance of Shenlufang No.5, Brick Plant,

Baqiao District, Xi'an

Xi'an Research and Design Institute of Wall & Roof Materials completed the prescriptive task of the UNIDO Contract and TOR of the project entitled "Energy Conservation and GHG Emissions Reduction in Chinese TVEs (Phase II) – Brick Sector Replication Project for Energy Efficiency (1) — Technical Renovation for Shenlufang No.5, Brick Plant, Baqiao District, Xi'an". The energy conversation technical renovation of our Plant achieves the anticipated target.

A) Xi'an Research and Design Institute of Wall & Roof Materials completed the following technical design for our Plant.

1. Completed process renovation (process layout drawing).

- 2. Completed installation drawing of newly added equipments
- 2.1 Cinder crusher
- 2.2 Type ϕ 800×600 high speed fine rolls

2.3 Type SJJ240-36 mixing extruder

2.4 Type JZK50/45-3.0 vacuum extruder

3. Proposed repair scheme of original annular kiln. Repaired the kiln body where gas leak off. Adopted advanced heat preservation and energy saving technology including using the heat preservation materials such as rock cotton, cinder and vermiculite to airproof the kiln. Removed kiln top and rebuilt it. Repaired the chamber's wickets. Temperature tester was added for annular kiln.

4. Proposed renovation scheme of electric equipment. Transducer controlling system was added for motor of kiln blower. Non-power compensator controlling system was added for extruder and hi-speed fine rolls. Electricity saving compensator on-site was adopted.

B) Completed order, renovation, installation and test-running of the process equipments and electric equipments listed in Form 1. All the equipments is running well (α indicates the equipment or item invested by UNIDO subsidy fund).

| No. | Name | Type/Model | Unit | Quantity | Remark | |
|-----|-------------------------------------|-------------------|-------|----------|----------|----|
| 1 | High-speed fine rolls | Φ 8 00×600 | Set | 1 | · | Ţ |
| 2 | Cinder crusher | 600×630 | Set | 1 | | i |
| 3 | Vertical column and green cutter | QT2000 | Set | 1 | _ | |
| 4 | Mixing extruder | SJJ240-36 | Set | 1 | | |
| 5 | Vacuum extruder | JZK50/45-3.0 | Set | 1 | | - |
| 6 | Temperature tester for annular kiln | 1200°C | Set | 1 | | ~1 |
| 7 | Damp | 38 chambers | Set | 38 | | |
| 8 | Blower | ZFJ-8 | . Set | 1 | | |
| 9 | Electricity saving compensator | WMJ series | Set | 3 | | |
| 10 | Model, die, core | JZK50/45-3.0 | Set | 1 | <u>☆</u> | 1 |

Form 1 Equipment List of Order, Renovation, Installation and Test-running

In addition, the Institute completed removing kiln top and rebuilding it and changing damp and fire hole cover. Fee for removing kiln top and rebuilding it was invested by UNIDO subsidy fund.

C) Completed technical and management technology training of relevant post

During the construction, the Institute developed technical and management training for the personnel in relevant working post, helped our Plant set up suitable management system, provided full and detailed consultative and technical service.

After the energy conversation technical renovation of the original production line completed by Xi'an Research and Design Institute of Wall & Roof Materials and through running for three months, the renovation of our Plant has reached anticipated goals. It is determined to realize saving 604.65 tons of coal equivalent (tce) per year, and to reduce gas emissions of $CO_2 1507.39$ tons per year.

Comparing between renovation before and after see form 2.

| Index | Unit | Before | After |
|-------------------------|---|--------------|--------|
| Output | (Common brick equivalent) ×10,000 bricks/year | 2,600 | 2,700 |
| Coal consumption | kg ce/10,000 bricks (Common brick equivalent) | 1,100 | 890 |
| Electricity consumption | kg ce/10,000 bricks (Common brick equivalent) | 70 | 56 |
| Rate of acceptance | % | 83 | 93 |
| Perforation | % | 22~23, 33~35 | 26, 45 |

Form 2 Comparing Between Renovation Before and After

Shenlufang No.5, Brick Plant, Baqiao District, Xi'an

Xi'an Research and Design Institute of Wall & Roof Materials

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Appendix 10:

Certificate of Acceptance of Shijiadao Hollow Brick Plant

Xi'an Research and Design Institute of Wall & Roof Materials completed the prescriptive task of the UNIDO Contract and TOR of the project entitled "Energy Conservation and GHG Emissions Reduction in Chinese TVEs (Phase II) – Brick Sector Replication Project for Energy Efficiency (1) —Technical Renovation for Shijiadao Hollow Brick Plant". The energy conversation technical renovation of our Plant achieves the anticipated target.

A) Xi'an Research and Design Institute of Wall & Roof Materials completed the following technical renovation for our Plant.

1. Annular kiln renovation

1.1 Leak of the 32 chambers kiln body was very serious because the brick of the kiln body was destroyed badly. So kept the basis, removed the kiln body and rebuilt it.

1.2 Used the sealing materials such as asbestos rope and ceramic cotton to airproof the other 32 chambers annular kiln.

2. Green brick yard renovation

Renovated the original green brick yard of this plant. Used fired hollow brick to make hack and increase the height of the hack. The hack width is 0.6m, passage between hack is 1.4m, and hack height is 0.15m. The area is $20,000m^2$.

3. Proposed renovation scheme of electric equipment

2 sets of non-power compensator controlling system was added for two-stage vacuum extruder. 1 set of transducer was added for energy conversation blower.

B) Completed order, renovation, installation and test-running of the process equipments and electric equipments listed in Form 1. All the equipments is running well ($rac{1}{2}$ indicates the equipment or item invested by UNIDO subsidy fund).

Form 1 Equipment list of order, renovation, installation and test-running

| No. | Name | Type/Model | Unit | Quantity | Remark |
|-----|------------------------------------|-------------------|----------------|----------|--------|
| 1 | Repair drainage system | 20,000 | m ² | 20,000 | |
| 2 | Seal the annular kiln | 32 chambers | Set | 1 | _ ☆ |
| 3 | Rebuild the annular kiln | 32 chambers | Set | . 1 | |
| 4 | High-speed fine rolls | ф 8 00×600 | Set | 1 | |
| 5 | Double-shaft mixer | SJ3000 | Set | 1 | |
| 6 | Transducer for blower | WMJ series | Set | 2 | \$ |
| 7 | Non-power compensator for extruder | WMJ series | Set | 1 | \$ |
| 8 | Vertical column cutter | QT107 | Set | 1 | |
| 9 | Model, die, core | JZK45/40 | Set | 2 | |
| 10 | Measure apparatus of caloric value | Type NW . | Set | 1 | |
| 11 | Cinder crusher | 600×630 | Set | 1 | , |

C) Completed technical and management technology training of relevant post

During the construction, the Institute developed technical and management training for the personnel in relevant working post, helped our Plant set up suitable management system, provided full and detailed consultative and technical service.

D) Result of the renovation

After running for 3 months, the energy conversation technical renovation of the original production line of our Plant completed by Xi'an Research and Design Institute of Wall & Roof Materials has reached following goals.

1. The output is increased 18% and the rate of acceptance is increased 12%.

2. Save 604.76 tons of coal equivalent (tce) per year.

3. Synthetically reduce gas emissions of CO₂ 1507.67 tons per year.

Comparing between renovation before and after see form 2.

Form 2 Comparing Between Renovation Before and After

| Name | | Unit | Before | After |
|-------------------------|------------------------|---|--------|-------|
| Output | | (Common brick equivalent) ×10,000 bricks/year | 2,200 | 2,600 |
| Rate | of acceptance | % | 80 | 92 |
| | Fired perforated brick | % | 22~23 | 25 |
| Perforation | Fired hollow brick | % | 33~35 | 37 |
| Coal consumption | | Kg ce/10,000 bricks (Common brick equivalent) | 1,200 | 980 |
| Electricity consumption | | Kg ce/10,000 bricks(Common brick equivalent) | 65 | 57 |

Shijiadao Hollow Brick Plant

By <u>72</u> 3 7 Date <u>2006</u> <u>6</u> 7

Xi'an Research and Design Institute of Wall & Roof Materials

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Appendix 11:

Certificate of Acceptance of Xi'an Oriental Hollow Brick Plant

Xi'an Research and Design Institute of Wall & Roof Materials completed the prescriptive task of the UNIDO Contract and TOR of the project entitled "Energy Conservation and GHG Emissions Reduction in Chinese TVEs (Phase II) – Brick Sector Replication Project for Energy Efficiency (1) – Technical Renovation for Xi'an Oriental Hollow Brick Plant". The energy conversation technical renovation of our Plant achieves the anticipated target.

A) Xi'an Research and Design Institute of Wall & Roof Materials completed the following technical design for our Plant.

1. Completed process renovation (process layout drawing).

2. Completed installation drawing of newly added equipments

2.1 Cinder crusher

2.2 Mixing-extruder

2.3 Rolls

3. Build a new annular kiln

Completed working drawing of 24 chambers annular kiln. The main indexes of the annular kiln are as follows.

(1) Product: Clay hollow brick, clay perforated brick

(2)Arch model: Half circle arch

(3) Dimension of the chamber: (Width×height): 4.1×2.7m

(4) Number of chamber: 24 chambers

(5) Output daily (×10,000 bricks):: 15 (Ignition in one place)

(6) Degree of interior burning: 90%

(7) Capacity of exhaust emission: 46,000m³/h

4. Proposed repair scheme of original annular kiln. Repaired the kiln body where gas leak off. Adopted advanced heat preservation and energy saving technology including using the heat preservative materials such as rock cotton, cinder and vermiculite to airproof the kiln. Removed kiln top and rebuilt it. Repaired the chamber's wickets.

5. Proposed renovation scheme of electric equipment. Transducer controlling system was added for motor of kiln blower. Non-power compensator controlling system was added for rolls, mixer and extruder.

B) Completed order, renovation, installation and test-running of the process equipments and electric equipments listed in Form 1. All the equipments is running well (\Rightarrow indicates the equipment or item invested by UNIDO subsidy fund).

| Form 1 Equipmen | t List of Order, Renovation, I | Installation and Test-running |
|-----------------|--------------------------------|-------------------------------|
|-----------------|--------------------------------|-------------------------------|

| No. | Name | Type/Model | Unit | Quantity | Remark |
|-----|--|------------|------|----------|--------|
| 1 | Excavator | W-3 . | Set | 1 | |
| 2 | Cinder Crusher | 600×630 | Set | 1 | |
| 3 | Non-power compensator for motor of mills | WMJ | Set | 4 | |
| 4 | Non-power compensator for motor of mixer | WMJ | Set | 1 | |

| No. | Name | Type/Model | Unit | Quantity | Remark |
|-----|---|------------|------|----------|--------|
| 5 | Non-power compensator for motor of type 45/40 vacuum extruder | WMJ | Set | 1 | |
| 6 | Vertical column cutter | QT2000 | Set | 1 | ☆ |
| 7 | Die | 1 | Set | 2 | \$ |
| 8 | Transducer for exhaust blower | SL-10 | Set | 2 | ☆ |
| 9 | Mills renovation | DW202 | Set | 1 | ☆ |
| 10 | Mixer renovation | DW302 | Set | 1 | ☆ |
| 11 | Measure apparatus of caloric value | Type NW | Set | 1 | |

In addition, the Institute completed drainage system renovation, kiln renovation and construction and test running of new annular kiln.

C) Completed technical and management technology training of relevant post

During the construction, the Institute developed technical and management training for the personnel in relevant working post, helped our Plant set up suitable management system, provided full and detailed consultative and technical service.

After the energy conversation technical renovation of the original production line completed by Xi'an Research and Design Institute of Wall & Roof Materials and through running for three months, the renovation of our Plant has reached anticipated goals. It was determined to realize saving 600 tons of coal equivalent (tce) and reducing emissions of CO_2 1737.50 tons per year.

Comparing between renovation before and after see form 2.

Form 2 Comparing Between Renovation Before and After

| Name | Unit | Before | After |
|-------------------------|--|--------|-------|
| Output | (Common brick equivalent) × 10,000 bricks/year | 2,490 | 4,000 |
| Rate of acceptance | % | 78 | 88 |
| Coal consumption | kg ce/10,000 bricks (Common brick equivalent) | 1,200 | 1,050 |
| Electricity consumption | kg ce/10,000 bricks (Common brick equivalent) | 70 | 51 |

Xi'an Oriental Hollow Brick Plant

By 注清 Date 2006.6.7

Xi'an Research and Design Institute of Wall & Roof Materials By

Date 2006.6.8.

Agriculture Ministry of China Project Management Office By ______ Date ______ Appendix 12:

Certificate of Acceptance of Chang'an Xibei Building Plant

Xi'an Research and Design Institute of Wall & Roof Materials completed the prescriptive task of the UNIDO Contract and TOR of the project entitled "Energy Conservation and GHG Emissions Reduction in Chinese TVEs (Phase II) – Brick Sector Replication Project for Energy Efficiency (1)– Technical Renovation for Chang'an Xibei Building Plant". The energy conversation technical renovation of our Plant achieves the anticipated target.

A) Xi'an Research and Design Institute of Wall & Roof Materials completed the following technical design for our Plant.

1. Completed process renovation (process layout drawing).

2. Completed installation drawing of newly added equipments

2.1 Cinder crusher

2.2 Type ϕ 800×600 high speed fine rolls

2.3 Type SJJ240-36 mixing extruder

3. Build a new annular kiln

Completed working drawing of 24 chambers annular kiln. The main indexes of the annular kiln are as follows.

(1) Product: Clay hollow brick, clay perforated brick

(2) Arch model: Half circle arch

(3) Dimension of the chamber: (Width×height): 4.1×2.7m

(4) Number of chamber: 24 chambers

(5) Output daily (×10,000 bricks):: 15 (Ignition in one place)

(6) Degree of interior burning: 90%

(7) Capacity of exhaust emission: 46,000m³/h

4. Proposed repair scheme of original annular kiln. Repaired the kiln body where gas leak off. Adopted advanced heat preservation and energy saving technology including using the heat preservation materials such as rock cotton, cinder and vermiculite to airproof the kiln. Removed kiln top and rebuilt it. Repaired the chamber's wickets. Temperature tester was added for annular kiln.

5. Proposed renovation scheme of electric equipment. Transducer was added for motor of kiln blower. Non-power compensator controlling system was added for extruder, mills and mixer. Electricity saving compensator on-site was adopted.

B) Completed order, renovation, installation and test-running of the process equipments and electric equipments listed in Form 1. All the equipments is running well (\Rightarrow indicates the equipment or item invested by UNIDO subsidy fund).

| No. | Name | Type/Model | Unit | Quantity | Remark |
|-----|--|--------------------|------|----------|--------|
| 1 | Bulldozer | Dong fang hong -70 | Set | 1 | · · · |
| 2 | Strong strength mixer | SJ240-36 | Set | , 1 | |
| 3 | High-speed fine rolls | ф 800×600 | Set | 1 | |
| 4 | Cinder crusher | 400×600 | Set | 1 | ☆ |
| 5 | Non-power compensator for motor of mills | WMJ series | Set | 4 | |

Form 1 Equipment List of Order, Renovation, Installation and Test-running

| No. | Name | Type/Model | Unit | Quantity | Remark |
|-----|---|------------|------|----------|--------|
| 6 | Non-power compensator for motor of mixer | WMJ series | Set | 1 | |
| 7 | Non-power compensator system for 45/40 extruder | WMJ series | Set | 1 | |
| 8 | Vertical column cutter | QT2000 | Set | 1 | ☆ |
| 9 | Measure apparatus of caloric value | Type NW | Set | 1 | |
| 10 | Transducer for exhaust blower | WMJ series | Set | 2 | |
| 11 | Die renovation | JZK45/40 | Set | 2 | |

In addition, the Institute completed drainage system renovation engineer of the green brick yard, removing kiln top of the old 22 chambers kiln and rebuilding it. Fee for removing and rebuilding the kiln top was invested by UNIDO subsidy fund.

C) Completed technical and management technology training of relevant post

During the construction, the Institute developed technical and management training for the personnel in relevant working post, helped our Plant set up suitable management system, provided full and detailed consultative and technical service.

After the energy conversation technical renovation of the original production line completed by Xi'an Research and Design Institute of Wall & Roof Materials and through running for three months, the renovation of our Plant has reached anticipated goals. It is determined to realize saving 800.46 tons of coal equivalent (tce) per year, and to reduce gas emissions of CO_2 1995.55 tons per year.

Comparing between renovation before and after see form 2.

Form 2 Comparing Between Renovation Before and After

| Index | Unit | Before | After |
|-------------------------|--|--------------|--------|
| Output | (Common brick equivalent) × 10,000 bricks/year | 2,400 | 3,000 |
| Coal consumption | kg ce/10,000 bricks (Common brick equivalent) | 1,150 | 900 |
| Electricity consumption | kg ce/10,000 bricks (Common brick equivalent) | 70 | 54 |
| Rate of acceptance | % | 78 | 92 |
| Perforation | % | 22~23, 33~35 | 26, 40 |

2

Chang'an Xibei Building Plant

By 李永祖_____

Date 3006.6.)

Xi'an Research and Design Institute of Wall & Roof Materials

·A Z By Date 2006.6.8.

Agriculture Ministry of China Project Management Office

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Appendix 13:

Certificate of Acceptance of Xiangfa New Building Materials Co., Xi'an

Xi'an Research and Design Institute of Wall & Roof Materials completed the prescriptive task of the UNIDO Contract and TOR of the project entitled "Energy Conservation and GHG Emissions Reduction in Chinese TVEs (Phase II) – Brick Sector Replication Project for Energy Efficiency (1) —Technical Renovation for Xiangfa New Building Materials Co., Xi'an". The energy conversation technical renovation of our Plant achieves the anticipated target.

A) Xi'an Research and Design Institute of Wall & Roof Materials completed the following technical design for our Plant.

1. Completed process renovation (process layout drawing).

2. Completed installation drawing of newly added equipments

2.1 Type ϕ 800×600 high speed fine rolls

2.2 Cinder crusher

3. Build a new annular kiln

Completed working drawing of 28 chambers annular kiln. The main indexes of the annular kiln are as follows.

(1) Product: Clay hollow brick, clay perforated brick

(2) Arch model: Half circle arch

(3) Dimension of the chamber: (Width×height): 4.1×2.7m

(4) Number of chamber: 28 chambers

(5) Output daily (×10,000 bricks):: 15 (Ignition in one place)

(6) Degree of interior burning: 90%

(7) Capacity of exhaust emission: 46,000m³/h

4. Proposed renovation scheme of electric equipment. Transducer controlling system was added for motor of kiln blower. Non-power compensator controlling system was added for extruder.

B) Completed order, renovation, installation and test-running of the process equipments and electric equipments listed in Form 1. All the equipments is running well ($\stackrel{\leftarrow}{rat}$ indicates the equipment or item invested by UNIDO subsidy fund).

| No. | Name | Type/Model | Unit | Quantity | Remark |
|-----|--|------------|------|----------|--------|
| 1 | Excavator | W-3 | Set | 1 | ☆ |
| 2 | High-speed fine rolls | ф800×600 | Set | I | |
| 3 | Cinder crusher | STS860 | Set | 1 | |
| 4 | Non-power compensator for motor of type 45/40 vacuum extruder | WMJ | Set | 1 | |
| 5 | Vertical column cutter | QT2000 | Set | 1 | |
| 6 | Die . | 1 | Set | 2 | |
| 7 | Transducer for exhaust blower | XCJ000 | Set | 2 | ☆ |
| 8 | Measure apparatus of caloric value | Type NW | Set | 1 | |

Form 1 Equipment List of Order, Renovation, Installation and Test-running

In addition, the Institute completed drainage system renovation and construction and test

running of new annular kiln.

C) Completed technical and management technology training of relevant post

During the construction, the Institute developed technical and management training for the personnel in relevant working post, helped our Plant set up suitable management system, provided full and detailed consultative and technical service.

After the energy conversation technical renovation of the original production line completed by Xi'an Research and Design Institute of Wall & Roof Materials and through running for three months, the renovation of our Plant has reached anticipated goals. It is determined to realize saving 628.15 tons of coal equivalent per year, and to reduce gas emissions of CO_2 1565. 97 tons per year.

Comparing between renovation before and after see form 2.

| Name | Unit | Before | After |
|-------------------------|---|--------|-------|
| Output | (Common brick equivalent)×10 ⁴ bricks/year | 2,300 | 2,600 |
| Rate of acceptance | % | 83 | 93 |
| Coal consumption | kg ce/10,000 bricks (Common brick equivalent) | 1,200 | 970 |
| Electricity consumption | kg ce/10,000 bricks (Common brick equivalent) | 70 | 62 |

Form 2 Comparing Between Renovation Before and After

Xiangfa New Building Materials Co., Xi'an

By_ 住佬尼____ Date _ 2006, 06, 07

Xi'an Research and Design Institute of Wall & Roof Materials

By 2006.6.8. Date _____

Agriculture Ministry of China Project Management Office

X By Date ______, 7,

2

Appendix 14:

Certificate of Acceptance of Hongqi St. Xiangyanggou Brick Plant, Baqiao District, Xi'an

Xi'an Research and Design Institute of Wall & Roof Materials completed the prescriptive task of the UNIDO Contract and TOR of the project entitled "Energy Conservation and GHG Emissions Reduction in Chinese TVEs (Phase II) – Brick Sector Replication Project for Energy Efficiency (1) – Technical Renovation for Hongqi St. Xiangyanggou Brick Plant, Baqiao District, Xi'an". The energy conversation technical renovation of our Plant achieves the anticipated target.

A) Xi'an Research and Design Institute of Wall & Roof Materials completed the following technical renovation for our Plant.

1. Annular kiln renovation

Use the sealing materials such as asbestos rope and ceramic cotton to airproof the other 40 chambers annular kiln.

2. Drainage system renovation

Renovated the original green brick yard of this plant. Used fired hollow brick to make hack and increased the height of the hack. The hack width is 0.6m, passage between hack is 1.4m, and hack height is 0.15m. The area is $27,000m^2$.

3. Proposed renovation scheme of electric equipment

1 set of non-power compensator controlling system was added for two-stage vacuum extruder. 1 set of transducer was added for energy conversation blower.

B) Completed order, renovation, installation and test-running of the process equipments and electric equipments listed in Form 1. All the equipments is running well ($\stackrel{<}{\propto}$ indicates the equipment or item invested by UNIDO subsidy fund).

| | · · · · · · · · · · · · · · · · · · · | | | - | |
|-----|--|-------------|----------------|----------|--------|
| No. | Name | Type/Model | Unit | Quantity | Remark |
| 1 | Repair drainage system | 27,000 | m ² | 27,000 | |
| 2 | Seal the kiln | 40 chambers | Set | 1 | \$ |
| 3 | High-speed fine rolls | ф 800×600 | Set | 1 | |
| 4 | Strong strength mixing extruder | SJ240-36 | Set 4 | · 1 | |
| 5 | Two-stage vacuum extruder | JZK50/45 | Set | 1. : | |
| 6 | Loader | Jiande502 | Set . | 1 | |
| 7 | Energy conservation blower | ZFJ-8 | Set | 1 | \$ |
| 8 | Non-power compensator system | WMJ series | Set | 1 | |
| 9 | Transducer controlling system for blower of kiln | WMJ series | Set | 1 | |
| 10 | Model, die, core | JZK50/45 | Set | 2 | |
| 11 | Vertical column cutter | QT107 | Set | 1 | |
| 12 | Measure apparatus of caloric value | Type NW | Set | 1 | |
| 13 | Cinder crusher | 600×630 | Set | 1 | |

Form 1 Equipment list of order, renovation, installation and test-running

C) Completed technical and management technology training of relevant post

During the construction, the Institute developed technical and management training for the personnel in relevant working post, helped our Plant set up suitable management system, provided full and detailed consultative and technical service.

D) Result of the renovation

After running for 3 months, the energy conversation technical renovation of the original production line of our Plant completed by Xi'an Research and Design Institute of Wall & Roof Materials has reached following goals.

1. The output is increased 12% and the rate of acceptance is increased 12%.

2. Save 609.29 tons of coal equivalent (tce) per year.

3. Synthetically reduce gas emissions of CO₂1518.95 tons per year.

Comparing between renovation before and after see form 2.

Form 2 Comparing Between Renovation Before and After

| | Name | Unit | Before | After |
|-------------|------------------------|--|--------|-------|
| | Output | (Common brick equivalent) × 10,000 bricks/year | 2,500 | 2,800 |
| Rate | e of acceptance | % | 80 | 92 |
| Derforation | Fired perforated brick | % | 22~23 | 26~27 |
| Perioration | Fired hollow brick | % | 33~35 | 40~45 |
| Coa | al consumption | kg ce/10,000 bricks (Common brick equivalent) | 1,150 | 940 |
| Electr | icity consumption | kg ce/10,000 bricks (Common brick equivalent) | 63 | 56 |

Hongqi St. Xiangyanggou Brick Plant, Baqiao District, Xi'an

By <u>\$ E \$ 5</u> Date <u>2006-6.7</u>

Xi'an Research and Design Institute of Wall & Roof Materials

2006.6.8. By Date

Agriculture Ministry of China Project Management Office

By ______ Date _______

Appendix 15:

Certificate of Acceptance of Xinyue Industry and Trade Co. Ltd.

Xi'an Research and Design Institute of Wall & Roof Materials completed the prescriptive task of the UNIDO Contract and TOR of the project entitled "Energy Conservation and GHG Emissions Reduction in Chinese TVEs (Phase II) – Brick Sector Replication Project for Energy Efficiency (1) — Technical Renovation for Xinyue Industry and Trade Co. Ltd.". The energy conversation technical renovation of our Plant achieves the anticipated target.

A) Xi'an Research and Design Institute of Wall & Roof Materials completed the following technical design for our Plant.

1. Completed process renovation (process layout drawing).

2. Completed installation drawing of newly added equipments

- 2.1 Cinder crusher
- 2.2 Type ϕ 800×600 high speed fine rolls

2.3 Type JZK45/40-30 vacuum extruder

3. Proposed repair scheme of original annular kiln. Repaired the kiln body where gas leak off. Adopted advanced heat preservation and energy saving technology including using the heat preservation materials such as rock cotton, cinder and vermiculite to airproof the kiln. Removed kiln top and rebuilt it. Repaired the chamber's wickets.

4. Proposed renovation scheme of electric equipment. Transducer controlling system was added for motor of kiln blower. Non-power compensator controlling system was added for mills, mixer and extruder.

B) Completed order, renovation, installation and test-running of the process equipments and electric equipments listed in Form 1. All the equipments is running well ($rac{l}$ indicates the equipment or item invested by UNIDO subsidy fund).

| No. | Name | Type/Model | Unit | Quantity | Remark |
|-----|--|------------|------|----------|--------|
| 1 | Excavator | | Set | 1 | |
| 2 | High-speed fine rolls | φ 800×600 | Set | 1 | ☆ |
| 3 | Cinder crusher | STS860 | Set | 1 | |
| 4 | Two-stage vacuum extruder | JZK45/40 | Set | 1 | |
| 5 | Non-power compensator for mills | GGD | Set | . 4 | |
| 6 | Non-power compensator for mixer | GGD | Set | 1 | |
| 7 | Non-power compensator for type 45/40 vacuum extruder | GGD | Set | 1 | |
| 8 | Transducer for exhaust blower | SL-10 | Set | 2 | ☆ |
| 9 | Measure apparatus of caloric value | Type NW | Set | 1 | |

Form 1 Equipment List of Order, Renovation, Installation and Test-running

In addition, the Institute completed drainage system renovation engineer, kiln renovation and test running.

1

C) Completed technical and management technology training of relevant post

During the construction, the Institute developed technical and management training for the personnel in relevant working post, helped our Plant set up suitable management system, provided full and detailed consultative and technical service.

After the energy conversation technical renovation of the original production line completed by Xi'an Research and Design Institute of Wall & Roof Materials and through running for three months, the renovation of our Plant has reached anticipated goals. It is determined to realize saving 641.64 tons of coal equivalent (tce) per year, and to reduce gas emissions of CO_2 1599.61 tons per year.

Comparing between renovation before and after see form 2.

Form 2 Comparing Between Renovation Before and After

| Name | Unit | Before | After |
|-------------------------|---|--------|-------|
| Output | (Common brick equivalent) $\times 10^4$ bricks/year | 3,400 | 4,500 |
| Rate of acceptance | % | 80 | 90 |
| Coal consumption | kg ce/10,000 bricks (Common brick equivalent) | 1,230 | 1,097 |
| Electricity consumption | kg ce/10,000 bricks (Common brick equivalent) | 70 | 62 |

Xinyue Industry and Trade Co. Ltd.

By 光园选 Date _____6.7

Xi'an Research and Design Institute of Wall & Roof Materials

Atre By Date _____6.6.8.

Agriculture Ministry of China Project Management Office

Bv doorb. Tr Date

M & E Form: Brick-making Sebsector Replication Project

| Π | | | - | | | | | E E Baseline | | | | | | | Project | Investment | | 0 | | | | Anticipated | Results | | | · . | |
|----|--|---|--|--|---|----------------------|--|--|--------------------------------|--------------------------------|--------------------|----------------------------|--|----------------------------|------------|--|---|--------------------------|--|------------------------|-----------------------|------------------------------------|---|---|-------------------------------|---|--|
| Na | TYEs | Business Profile | Technical Process and Najor Emergy- use Equipments | Emergy Type | Energy consumption (physical quantity) | Conversion Factor | Energy use (Lce) | Emergy Use/Unit Product | Output Before Removation | Total sergy use (tce) | CO2 Coefficient | CO2 Enissious (t/a.) | Proposed Technical Resovation | Total (RNB ¥ 10,000) | GEF (US\$) | Others (RMB¥ 10,000) | Project Status | Start-end date | Financia | LL Evalu | vation | Froduction s fter renovation | Energy Pro | Use/Usit ⊳duct | Esergy Savings (toe/a_) | CO ₂ emission Reduction t/a.) | Kenarks (|
| | Hollo w Brick Plant, Baling Town, Bargia o Distric , Xi * ao | This plant was stabilished as a collectively owned plant in the 1980p, it occupies an area of own 80 ma (1 mir = 1/13 bectare). Priot 24 million RMB Yam and produces an annual output of 24 million tricks (common brick oquivalent). While it has fixed assets of 1.32 million RMB Yam and produces an annual output of 26.88 million bricks (common brick oquivalent). While it has fixed assets of 1.32 million RMB Yam and produces an annual output of 26.88 million bricks (common brick optivalent) after renovation. At present,the plant amploys 100 people including 8 trichquieta and the salary is 820 RMB Yam/month on average. The main raw catterial is clay an cinder. The two main products at first performed brick (module 240×115 - 30) and fired hollow brick (module 240×240-115). The price of the hollow in 1.00 RMB Yam/piece and the performation is over 45%. As a neath of increases from 78% to 30%, Mo | Production process and equipments: Cinder crush + boxing feeder coarse rolls-hi- speed fine rolls - - mixer round extruder vertical column extruder retrical column extruder retrical column extruder retrical column extruder retrical column extruder retrical column extruder firing in annual kiln the main energy consumption equipments 1) The repaired 38 chambers annular shinespeed fine extruder 6) Column cutter 7) Green brick cutter 8) Exhaust blower | Internal combustive <u>coal</u> (t) External combustive coal (t) Power/MTh | 7200.00 2160.00 432.00 | 0.19 | 6 1.411.20 3 1.583.28 3 165.46 3,159.94 | Coal: 1.25 tce/10,000 Power: 0.07 tce/10,000 bce C energy 1.32 tce/10,000 consum ption | 2,400 10,000 boc'a/ | 3,159.94 | 2,493 | 7,877.72 | ()Kilk renovation The 38 chamber annular kiln was acaled The surface backillhag of the argular kiln was carried sway and the lasking flue and arch roof was repaired and tamped. 2)Beginpromit rejovation a) Purchase as if of new excavator, finstall and debug the equipments including cinder crusher, hi-speed fine rolits, vacuum equider and vertical column cutter. b) Die installation and commissioning 3) Electric equipment renovation 4) Drainage system of green brick yard removation 5) Staff training | 51.6932 | 12,000.00 | Commercial loan Entrustment Loan Self- Funding 41.76 | 920 The renovation project has been completer according to the technical plan. | 2005.03.10 2005.08.31 | Payback perjod 1RS NPV Cost of energy saving | 2.61 46.0L 76.63 | year % ¥10,000 | 10,000 2 688 common bricks/a | Coal: 1.00 Power: 0.05 C energy 1.0 ption | 0 tce/10,000 bce 4 tce/10,000 bce 5 tce/10,000 bce | 707.00 | 1,762.53 | 1)The baseline year is in 2004.2)The data in Basinem Profile column, comes from field investigation 3/Phisical quantity of energy concumption comes ficen the Feastbility Report. <i>#Ocan ension</i> factor is derived from factor is derived from formula, that is Convenion factor Feastball colour for value of call equivalent. 5/Total investment and GEF comes from the Ingallation and Commissioning Report 6/Payback period, IRR and NPV is realibrated on the basic data after renvestion. |
| 2 | Hong qi New Type Buildi ng Materi als xi'an | This plant was established as a collectively owned plant in the collectively owned plant in the 1980s. It occupies an area of over 120 mu (1 mur=1/13 bectare). Prior to the project, the plant has fixed assets of 1.1 million Bricks (common brick equivalent). Whi it has fixed assets of 1.68 million Bricks (common brick equivalent). Whi it has fixed assets of 1.68 million Bricks (common brick equivalent) and produces an anneal output of 46 million brick (common brick equivalent) and the technical popel and the salary is 850 RMB Yuan/month on average. The main results and produces and its product are fired perforated brief (module 240×113×90) and fired bullow brick (module 240×240×115). The price of the perforation rate is over 25%. The price of the performation rate is over 25%. Mos of the products are fired particular to renovation, brick quality inproved and the sectoration rate in over 37%. As a result of renovation, brick quality inproved and the acceptance rate increases from 30% to \$25%. Mos of the products are fired particular or a block by and fired of the products are fired particular or a block by a set of the product are fired part of the product are fired parts and the performance of the product are fired parts and the performance of the product are sold on the local market in XFan. | Production process and equipments: Boxing feeder→ rolls crusher→hi- speed fine rolls→ double shaft mixer double shaft mixer = -two-stage vacuum extruder - column cutter adobe transporting machine - natural drying - firing in annular kiln The main energy consumption equipments 1)New 38 chambers annular kiln 2)Boxing feeder 3)Cinder crusher 3)Hi-speed fine rolls 6)Double shaft mixer 7)Two stage vacuum extrude 8)Column cutter 9)Cincea cutter 10)Blower | Internal combustive conl (f) External combustive conl.(t) Power/NUh | 16940.00 | 0.2 | 9 4839.76 0 3 269.63 5109.39 | Coal: 1.10 tce/10,000 bce Power: 0.061 tce/10,000 bce C energy L16 tce/10,000 consum ption | 4400 10,000 boe'a / | 5109.39 | 2.433 | 12737.71 | It I) Renewing process equipment I set of Type 4200-600 hispeed face rolls was introduced. The Type IZX450 vacuum extruder is replaced with a Type IZX500 two-stage vacuum extrader, Replace the original column cutter with the vertical column beater to reduce wasted column by 10% j 2) Armutar kila, renovation The 24 chamber samular kiln was removed, while the vertical wall was the vertical the the the vertical the the vertical the the vertical the the the vertical the the the vertical the the vertical the the the vertical the | 57.6956 | 12,000.00 | Commercial loan Entrustment Loan Self- Funding Financial Assistance | 160 The renovative project has been completed according to the technical plan. | 2005.03.10 2005.08.31 | Payback period JRR NPY Cost of energy Saving | 1.94 | year % ¥ 10,000 | 10,000 600 common bricts/s | Coal: 0.9 Power: 0.05 Consum ption | 7 tcc/10,000 bce 4 tcc/10,000 bcc 2 tcc/10,000 bcc | 632.98 | L57803 | 1)The baseline year is in 2004.2)The data in Business Profile column comes from field investigation. 3)Phinical quantity of correctly consumption comes from the Feasibility Report. 4/Conversion feasers is derived from formula, that is Conversion factor =Factual colorific value of food Colorific value of food Colorific value of coal acquivalent. The Plant uses the poor coal GEF comes from the fearorated actual data s/jPayback period. IRB dGEF conses from the fearorated actual data s/jPayback period. IRB easily Play in coloring on the basic data after fearoration. 7)Energy consumption of unit product comes from the Fearibility Report. |

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| | | | | | | | | | | | | | | · · · · · · · · · · · · · · · · · · · | | | | | | | | | | | | | |
|----------|--|--|--|--|----------------------------------|-------|--|--|-----------------------------|----------|---|--|---|---------------------------------------|-----------|--|---|---|---|------------------------------------|--------------------------------|-----------------------------------|--|--|---|---|---|
| F | - 11 | his plant was established as a | Production | Internal | | | | (10.000 | | | - 4 | | 1)Annular kiln renovation | | i e | Comercial | | | Paybac | | | | | tce/10,00 | 0 | | ()) ne basenne year |
| 11 | | Bestively general plant in 2000 | | apphustive | 7200.00 | 0.196 | 1.411.20 | Coal: 1.25 tce/10,000 | | · · | | | The 40 chambers annular kiln was | | | lass | | | anti od | 2.37 | year | | Coal: | 1.000 bce | | | is in 2004.2)The data |
| 1 1 | 1. | And the second s | process nod | | 1200.00 | | 1 | bce | | 1 | 1 | | anded. The surface backfilling was | 1 | - i | 10an | 1 | 1 | (period | 1 1 | | · ۱ | L | | | 1 | in Business Profile |
| | l l' | occupies an area of over 150 | equipments: | C001 10 | Ļ | | | | | | | | and a many and the looking flut | | | | | | | 1 8 | | | | | | | column comes from |
| 1 1 | | u (1840-1/15 necale). Phor to | Cinder crusher + | External | | | [| tce/10,000 | | | | | carned away and the reaking rise | | Je | atrustment | | | 1122 | 50 30 | % | | Power: (| 0.054 tee/10, ot | ~ | | field investigation |
| 1 1 | l P | se project, the plant has fixed | boxing feeder | combustive | 2400.00 | 0.763 | 1,831.20 | Power: 0.07 bce | | 1 | | | and arch root was repaired and | | | Loan | | | 1 | | | | | bce | | | 2) Obisinal quantity of |
| 1 1 | 1 1 | india of 1.2 million AALD Yuan | hissneed fine rolls | coal (t) | | | | | | | l | | tamped. | | - F | | | | 1 | 1 1 | | | <u> </u> | | - | 1 | S It makes quality of |
| | | nd produces an attriuit output of | | | | 0.303 | 170.24 | | | | [| | 2)Process equipments renovation | | | Self- 46 | 53780 | | NPV | 95.33 | ¥10,000 | | 1 | | | | energy consumption |
| | | 6 million bricks (controon brick | - mixing | Power/XWh | 408.00 | 0.363 | 1/9.24 | | | | | | a introduce a set of new excavator. | | | Funding | | | | ! | | | | | - | | comes from the |
| 11 | 1 | quivalent). While it has lixed |]extruder — — | <u>}</u> | | | | | | 1 1 | 1 | | Install and debug the equipments | 1 | 1 | ì | 1 | 1 | 1 | 1 1 | | 1 | 1 | | 1 | 1 | Feasibility Report. |
| | | sants of 1.76 million RMB Ysuan | vacuum extruder | 1 1 | 4 | | 1 | | | | 1 | | distait and oddag are equipments | i | | | - i | | | | | 1 | 1 | | | | A Conversion factor |
| | | nd produces an annual output of | | | | | | | | | 1 | | including cinder crusher, hi-speed | | | | | | | 1 1 | | | | | | | in derived from |
| 1 1 | | 0 million bricks (common brick | | | | | | | | | 1 | | fine rolls, mixing extruder and | | | | | | | | | | | | | | IS BOILYOU LIOU |
| | | ovivalent) after reportion. At | contrain cutter | | 1 | | | | | | 1 | | vertical column cutter. | | | | - | | | | | | 1 | | | | formula, that is |
| | | count the night complexes 130 | green brick cutter | | 1 | | | | | | 1 | | by Die installation and | | 1 | | 1 | The | | 1 | | 1 | | | | | Conversion factor |
| 11 | | and including 11 technical | matural drying | | | | . I | | 1 | | | | of the instantion who | | | | | oution | | | | | 1 | | | | -Factual calorific |
| 11 | 1 1 | CONCINCING OF CONTINUES | firing in | 1 • 1 | 1 | | 1 | ł | | | 1 | | commissioning. | | 1 | 1 | | | 1 | 1 | | } | 1 | | 1 | 1 | unling of fueld |
| 11 | | eopie and the solary is 670 Kong | - nonder kiln | | i | | | . | | | | | 3)Electric renovation. Transducer | E E | | | pro | Steet URO | | | i . | 10.000 | | | | | |
| 1 1 | Hongtan | uanymonth oil average. The | | | | | | | 10.000 | 1. | | - | was added to kiln blower. Non- | | | | | been 2005.0 | G.10 | | | 10,000 | | | | | Caloring value of |
| 1.1 | 8 | nain raw material is clay and | I he main energy | | | | 1 | | 2.600 | 3.421.64 | 2,493 | 8,530,16 | nower commensator was added to | 56.4618 | 12,000.00 | | 00 | mpleted ~ | | | | 3,000 common | n! | | 787.1 | 9 1,964.4 | coal equivalent. |
| 13 | Building | inder. The two main products ar | < consumption | | | | | | bce/a/ | | | | manutur and hispood calls and | 1 | | | ac | cording 2005.0 | 8.31 | | | bricks/a. | .1 | | | 1 () () () () () () () () () (| 5)Total investment |
| 1 1 | Material | ired perforated brick (module | equipments: | | | | i | | | | 1 | | exulter, and in-speed tons and | | 1 | | | to the | | | | | 1 | | | | and GEF comes from |
| 1 1 | 1 Co | 40×115×90) and fired hollow | 1)The received 40 | 1 + | | | 1 | c. | | | · · · · · · · · · · · · · · · · · · · | | mixing extrusion apiece. | 1 | | | 1. | ····· | | | | | IC . | | | | the Installation and |
| | 1 1 | rick (module 240 * 240 * 115). | chembers annular | | | · · · | 1 | | | | | | 4)Drainage system of green brick | | | Financial | * | cuncal | LOSL 0 | ۰ ۱ | 80.0 | | energy | 105 tce/10,0 | 00 | | |
| 1 1 | | The price of the perforated is 0.34 | 6 Julia avoia dan | Sum total | | | 3,421.64 | 1.32 ccer 10, 000 | | | | | yard renovation | | | Assistance | | plan. | energy | 101.2 | ± 1/10e | | consum | bce | | | Commissioning |
| | | RMB Yuan/piece and the | Kin 2 Cinocr | | | | 1 | consum DCe | | | | | S)Staff training | 1 | | and the second second | | | sav ing | | | [| Intice | | | | Report 6)Payback |
| | | serforation rate is over 26 %. Th | e [crusher 3)Hi-speed | 위. [| | | 1 | ption | | 1 | | | l' 1º | | | | 1 | | 1 | 1 | | | 1 | | 1 | | period, IRR and NPV |
| | | rice of the hollow is 1.02 RMB. | rolls 4)Mixing | | | | 1 | 1 | | · | | | 1 | | | | 1 | | 1 | 1 : | | 1 | 1 | | 1 | 1 | is calibrated on the |
| | | 'wan/niece and the perforation | extruder | 1 1 | · · · · | | | 1 | | | | | 1 1 1 | | | | 1 | | 1 | 1 | | | 1 | | | | basic data after |
| 11 | | nto is over Altha As a result of | SWacuaum | 1 · .[| | | 1 . | L | | | | | | 1 | | | | L | | ļ · | l | | ł – | | 1. | 1 | Carlo Gala etc. |
| | 1 1 | and is over the set of a result of | and an CYC alum | 1 | | | | | 1 1 1 | | • | | 1 1 1 | | | | 1 | | | 1 | | | 1 | | 1 | | renovation. / intergy |
| | | encountries, or the quantity | extrucer of colum | П. | 1 | | | |] | | | | 1 1 1 | Í | | | 1 | | | 1 | | | | | 1 | | consumption of unit |
| | | improved and the acceptance rate | cutter 7)Green | | | | | | | | | | i - | 1 | | | | | | | | | 1 | | 1.1 | | product comes from |
| | | Increases from 7876 to 90%. Mor | brick cutter | | <i>'</i> | | ł. | | | 1 . | | | 1 1 1 | 1 | | | 1 | | | 1 | | | | | | | actual determination. |
| | 1 1 | of the products are sold on the | 8)Exhaust blower | | | | 1 | | | | e e e e e e e e e e e e e e e e e e e | | | | | | | | | | | 1 | 1 | | 1 . | | |
| | | local market in Xa'an. | | | | · · | ţ | - | 1 | 14 A. | | | | 1 | | | | | 1 | | | | 1 | | | | |
| | | | 1 | | | | 1 | 1 · · · · · · · · · · · · · · · · · · · | 1 | 1. 1. | | i ta | 5 5 5 | 1 | | | - I | 4 | | 1 | | 4 | 4 1 | | | - I | ,. |
| | 1 1 | | | | | | 1 | | | | | | | 1 | | | - I | | | | | | | | | | 1 |
| | | | | | | 1 · · | | | | | | | | | 1 | 1 | | | | 1 | | | 1 | | | | |
| | | | | | L | L | <u> </u> | · · · · · · · · · · · · · · · · · · · | | L | | | · | | | | | | | | _ | | | | | | |
| | | | | | | | | | | | | | | | | | | ······ | | | | | | | | | Turns a baseline sure in |
| | | | | | | | | | | | | | and the second se | | | | | | | | | | | | | | |
| | | This plant was established as a | Process | Internal | | | <u> </u> | | J | T | | 1.11 | 1)Renewing process equipment | | | Commercial | | | Paybar | k | | | | 0.00 tce/10.0 | 00 | 1 | ()) no concluse year is |
| Π | | This plant was established as a collection to more plant in 1926 | Process | Internal | 9022 50 | 0.1 | 4 1263, 15 | Coal: 1.20 tce/10,000 | | | | n an San San Na | 1)Renewing process equipment Replace the shoond rolls crusher with | | | Commercial | | | Paybac | k 3.05 | уелг | | Coul: | 0.95 tce/10.0 | 00 | | in 2004.2)The data in |
| Π | | This plant was established as a collectively owned plant in 1986 is a set of our 102 | Process production and | Internal combustive | 9022. 50 | 0.1 | 4 1263. 15 | Coal: 1.20 tce/10,000 |) | | | | 1)Renewing process equipment Replace the school rolls crusher with Type \Rightarrow 800×600 hi-speed fine rolls to | | | Connercial Loau | | | Paybac geriod | k 3.05 | year | | Coul: | 0.95 tce/10,0 bce | 00 | | in 2004.2)The data in Business Profile column |
| | | This plant was established as a collectively owned plant in 1986 It occupies an area of over 107 | Process production and equipments: | Internal combustive coal (t) | 9022. 50 | 0.1 | 4 1263. 15 | Coal: 1.20 tce/10,000 | | , | | | 1)Renewing process equipment Replace the whond rolls crusher with Type \$600*600 hi-speed fine rolls to eliminate the fine nodules in the clay | | | Compercial Loau | | | Paybac period | k 3.05 | уеаг | | Cosl: | 0.95 tce/10.0 bce | 00 | | 1)1 ne conciste year is in 2004.2)The data in Business Profile column comes from field |
| ļ | | This plant was established as a collectively owned plant in 1986 It occupies an area of over 107 ms (Insu=1/15 bectare). Prior to | Process production and equipments: Boxing feeder- | Internal combustive coal (t) External | 9022. 50 | 0.1 | 4 1263. 15 | Coal: 1.20 tce/10,000 bce | | | | | 1)Renewing process equipment Replace the woord rolts crusher with Type & 800-\$00 hi-speed fine rolts to eliminate the fine nodules in the clay and to control the raw material | | | Connercial Loau Entrustment | | | Paybac period IRR | k 3.05 38.52 | уеаг % | | Coal: Power: | 0.95 tce/10.0 bce | 00 | | (1) ne concara year is in 2004.2) The data in Business Profile column cornes from field investigation. 3) Phisics |
| Ì | | This plant was stablished as a collectively owned plant in 1986 It occupies an area of over 107 ma (lasu=1/15 bectare). Prior to the project, the plant has fixed | Process production and equipments: Boxing feeder rollsdouble sha | Internal combustive coal (t) External frombustive | 9 022. 50 4511. 25 | 0.1 | 4 1263. 15 9 1308. 26 | Coal: 1.20 tre/10,000 bee Power: 0.071 tre/10,000 | | | | | 1)Renewing crocess equipment Replace the woord rolls crusher with Type & 800*600 hi-speed fine rolls to climinate the fine nodates in the clay and to control the raw material fenences. Replace the Type 330 | | | Connercial Loau Entrustment Loan | | | Paybac period IRR | 3.05 | уедг . % | | Coal: Power: | 0.95 tce/10.0 bce 0.063 tce/10.0 bce | 00 | | (1) for concerns year is in 2004.2) The data in Business Profile column comes from field investigation. 3) Philics quantity of energy |
| ļ | | This plant was established as a collectively owned plant in 1986 It occupies an arcs of over 107 mms (1200 ±1/15 hectare). Prior to the project, the plant has fixed assets of 1.2 million RMB Yuan | Process production and equipments: Boxing feeder rollsdouble sha | Internal combustive <u>coal (t)</u> External fr combustive coal (t) | 9022. 50 4511. 25 | 0.1 | 4 1263. 15 9 1308. 26 | Coal: 1.20 tce/10,000 bce Power: 0.071 tce/10,000 bce | | | | | 1)Renewing crocess equipment Replace the wood rolts crusher with Type 4 800+800 his-speed fine rolts to eliminate the fine nodules in the clay and to control the raw material finances. Replace the Type 330 estruder with Type J2K3/40 two | | | Connercial Loan Entrustment Loan | | | Paybac period IRR | k 3.05 38.52 | year % | | Coml: Power: | 0.95 tce/10.0 bce 0.063 tce/10.0 bce | 00 | | 1) In construct year is in 2004.2) The data in Business Fronfield investigation. 3) Phisics quantity of energy consumption comes |
| Ì | | This plant was ratablished as a collectively on-aed plant in 1986 It occupies an area of over 107 rms (1sau=1/15 becture). Prior to the project, the plant has fixed speets of 1.2 million RMB Yuan and produces as annual output o | Process production and equipments: Boxing feeder-+ rollsdouble sha mixer-two-stage | Internal combustive <u>coal (t)</u> External combustive coal (t) | 9022. 50 4511. 25 | 0.1 | 4 1263, 15 9 1308, 26 | Coal: 1.20 tre/10,000 bce Power: 0.071 tre/10,000 bce | | | | | 1)Renewing process equipment Replace the whord rolls crusher with Type 4 800 + 460 hierards fine rolls to climinase the fine nodes in the clay and to control the raw material finences. Replace the Type 350 extruder with Type IZK45/40 two save vacanne extradent to git the clay | | | Compercial Loau Entrustment Loan Self- | 44.03610 | | Paybac period IRR NPV | k 3.05 38.52 60.88 | year % ¥10,000 | | Coml: Power: | 0.95 tce/10.0 bce 0.063 tce/10.0 bce | 00 | | 1) he constance year is in 2004.2) The data in Business Profile cohard cornes from field investigation.3) Philsics quantity of energy consumption cornes from the Feasibility |
| , | | This plant was established as a collectively enseed plant in 1986 It occupies an area of over 107 ms (Insu-1/15 hecture). Frior to the project, the plant has fixed assets of 1.2 million RMB Yuan and produces as annual output of 21.48 million bricks (common | Process production and equipments: Boxing feeder + rolls double sha mixer two-stage vacuum extruder | Internal combustive coal (t) External frombustive coal (t) Power/MTE | 9022. 50 4511. 25 397.38 | 0,1 | 4 1263, 15 9 1308, 26 3 152,21 | Coal: 1.20 tce/10,000 bce Power: 0.071 tce/10,000 bce | | | | | 1)Renewing process equipment Replace the whord rolls crusher with Type & 800 - 800 his-peed fine rolls to eliminate the fine nodelse in the Clay and to control the ruw material finaness. Replace the Type 3 50 extruder with Type 12K 5540 two stage vacuum extruder to mix the clay out the incriment and one. Remarks the | | | Commercial Ioau Entrustment Loan Self- Funding | 44.03610 | | Paybac period IRR NPV | 3.05 38.52 60.88 | уеаг % ¥10,000 | | Coal: Power: | 0.95 tce/10.0 bce 0.063 tce/10.0 bce | 00 | × | (1) no constant year is in 2004.2) The data in Business Profile coltant cornes from field investigation. 3) Physics quantity of energy consumption comes from the Feasibility Report. 4) Conversion |
| , | | This plant was entablished as a collectively owned plant in 1986 to coapses an area of over 107 nm (laux=1/36 bodarcs). Froit the project, the plant has fixed assume of 1.2 million kHB (yau and produces as stanual output class (common brick equivalent). While it has the complex equivalent of the project equivalent. | Process production and equipments: Boxing feeder +- rollsdouble sha mixer two-stage vacuum extruder column cutter | Internal combustive coal (t) External combustive coal (t) Power/MTh | 9022. 50 4511. 25 397.38 | 0.1 | 4 1263, 15 9 1308, 26 3 152,20 | Coal: 1.20 tre/10,000 bee Power: 0.071 tre/10,000 | | | | | 1)Renewing process equipment Replace the whord rolls crusher with Type 6 800 + 400 his-past fine rolls to climinuse the fine nodules in the clay and to control the raw materia finances. Replace the Type 350 extruder with Type IZK45340 two hange vaccuus extrader to aix the clay and the interve fuel rever. Replace the observe and with vertical roleman | | | Commercial Loan Entrustment Loan Self- Funding | 44.03610 | | Paybac period IRR NP¥ | 4 3.05 38.52 60.88 | уелг % ¥10,000 | | Cosl: Power: | 0.95 tce/10.0 bce 0.063 tce/10.0 bce | 00 00 | × | (1) the constant year is in 2004 2)The data in Business Profile column comes from field investigation. 3)Phinics quantity of energy communition comes from the Feasibility Report. 4)Conversion factor is derived from |
| , | | This plant was natabilished as a collectively owned plant in 1986 It occupies an area of over 107 rows (law=1/3 blockace). Froit to the project, the plant has fixed azents of 1.2 million RMB Yuan and produce as instanal oxybup of 21.48 million bricks (common brick equivalent). While it has fixed anets of 1.74 million RMB. | Process production and equipments: Boxing fooder→ rolls→double sha mixer→two-stage vacuum extruder → column cutter- θ green brick cutter | Internal combustive coal (1) External fr combustive coal (1) Power/MTh | 9022. 50 4511. 25 397.38 | 0.1 | 4 1263, 15 9 1308, 26 3 152,20 | Coal: 1.20 tre/10,000 bce Power: 0.071 tre/10,000 | | | | | 1)Renewing process equipment Replace the whord rolls crusher with Type 4 800 viewed firms rolls to eliminate the firms nodeles in the citay and to control the raw material finances. Replace the Type 350 extruder with Type 12K45340 two alogo vacuum extruder to mix the clay and the interior fuel over Replace the column course with vertical column here | | | Commercial Loan Entrustment Loan Self- Funding | 44.03610 | | Paybac period IRR NP¥ | 4 3.05 38.52 60.85 | усаг % ¥10,000 | | Coal: Power: | 0.95 tce/10.0 bce 0.063 tce/10.0 bce | | | 1) In the constant year is in 2004 2.7 The data in Business Profile cohum comes from field investigation. 3/Philic cohum community of energy community of energy community of energy community of energy from the Feasibility Report. 4/Convention factor is derived from formula, that is |
| Ì | | This plant was established as a collectively owned plant in 1986 It occupies an area of over 107 enter (1200 ±1/15 becare). Prior to the project, the plant has fixed assets of 1.2 million RMB Yuan and produces as annual output on 21.48 million bricks (common brick equivalent). While it has fixed assets of 1.74 million RMI Yuan and produces an assets! | Process y coluction and equipments: Boxing feeder→ rolls→double sha g mixer→two-stage vacuum extruder → column cutter agreen brick cutter → adobe | Internal combustive <u>coal (t)</u> External fr combustive coal (t) Power/ATTA | 9022. 50 4511. 25 397.38 | 0.1 | 4 1263, 15 9 1308, 2 6 3 152,21 | Coal: 1.20 tce/10,000 bce Power: 0.071 tce/10,000 bce | | | | | 1)Renewing process equipment Replace the whord rolts crusher with Type & 800 - 800 his-pead fine rolts to eliminate the fine nodales in the clay and to control the raw material finances. Replace the Type 330 extruder with Type 12K 4340 two tage vacuum-extruder to mix the clay and the interior fuel ones. Replace the column outer, with vertical column cutter to reduce the ions of column by the interior fuel one of column by | | | Commercial Loan Entrustment Loan Self- Funding | 44.03610 | | Paybac period IRR NP∀ | k 3.05 38.52 60.88 | year % ¥10,000 | | Coal: Power: | 0.95 tce/10.0 bce 0.063 tce/10.0 bce | | | 1) In the constance year is in 2004 2.7 the data in Business Profile cohere comes from field investigation. 3/Phisics quantity of energy consumption comes from the Feasibility Report. 4/Conversion factor is derived from formula, that is Conversion factor |
| | | This plant was natabilished as a collectively owned plant in 1986 It occupies an area of over 107 row (1xm + 1/3 bodarc). Froit out the project, the plant has fixed assets of 1.2 million RMB Yuan and produces as annual owippot 21.48 million bricks (common trick equivalent). While it has fixed assets of 1.74 million RMI Yuan and produces as annual output of 24 million bricks | Process production and equipments: Boxing fooder- rols-double sha winter-two-stage vacuum extinder - column cutter- B green brick cutter - adobe transportine | Internal combustive coal (t) External fr combustive coal (t) Power/WTh | 9022. 50 4511. 25 397.38 | 0.1 | 4 1263. 15 9 1308. 26 3 152.24 | Coal: 1.20 tre/10,000 bce Power: 0.071 tre/10,000 bce | | | | | 1)Renewing process equipment Replace the whord rolls crusher with Type 4 800 + 460 hierards fine rolls to climinuse the fine nodules in the clay and to control the raw material finences. Replace the Type 350 estructor with Type IZK45340 two stage vacuum estructed to aix the clay and the interve final over. Replace the column outer with vertical column by 10% Introduce 1 at of loadet to | | | Commercial Loau Entrustment Loan Self- Punding | 44.03610 | | Paybac period IRR NPV | 4 3.05 38.52 60.88 | year % ¥10,000 | | Coal: Power: | 0.95 tce/10,0 bce 0.063 tce/10,0 bce | | | (1) In Constitute year in a 2004 2) The data in Business Profile column cornes from field investigation 3) Physics quantity of energy consumption comes from the Feasibility Report. 4) Convention factor is derived from formula, that is Conversion factor -#Actual advictife value |
| , | | This plant was stabilished as a coolectively owned plant in 1986 it occupies an area of over 107 mm (1zuw $1/3$ b hockare). Froit to the project, the plant has fixed assets of 1.2 million RMB Yuan and produces as manual oxybu of 21.48 million bricks (common brick equivalent). While it has fixed anext of 1.74 million RMD Yuan and produces an assued output of 24 million bricks. | Process production and equipments: Boxing feeder rollsdouble sha mixer two-stage vacuum extruder oolumn outer green brick cutter adobe pransporting machine soluter | Internal combustive coal (t) External R combustive coal (t) Porer/WTh | 9022. 50 4511. 25 397.38 | 0.1 | 4 1263. 15 9 1308. 26 3 152.21 | Coal: 1.20 tre/10,000 bce Power: 0.071 tre/10,000 bce | | | | | 1)Renewing process equipment Replace the whord rolls crusher with Type & 8000 +600 hispead frame rolls to eliminate the fine nodeles in the clay and to control the raw material finences. Replace the Type 350 subroder with Type JZR45/40 two- stage vacuum extruder to mix the clay end the interior field revealed the clay und the interior field revealed the clay content course with vertical column scatter to reduce the isso of column by 10%s. Interoduce 1 set of loader to reduce tabler and increase production difference. | | | Commercial Loau Entrustment Loan Self- Punding | 44.03610 | | Paybac period IRR NPV | k 3.05 38.52 60.88 | year % ¥10,000 | - - - | Coal: Power: | 0.95 tce/10.0 bce 0.063 tce/10.0 bce | | | (1) In Constant year is in 2004 2) The data in Business from field investigation. 3) Philicit quantity of energy consumption courses from the Feasibility Report. 4) Convention factor is derived from factor is derived from factor is derived from Convention factor –Factual calorific value of fact/ Calorific value |
| , | | This plant was entablished as a collectively owned plant in 1986 It occupies an area of over 107 row (Izaw 1/15 bodarcs). Prior to the project, the plant has fixed zones of 1, 2 million kMB (yaan and produces as nonual output of 21.48 million bricks (common brick equivalent). While it has fixed assets of 1.74 million RMB (yaan and produces an aswall output of 24 million bricks (common brick, equivalent) after renovation. At pretend, the plant | Process production and equipments: Boxing feeder | Internal combustive coal (t). External f combustive coal (t) Porer/IUTh | 9022.50 4511.25 397.38 | 0.1 | 4 1263, 15 9 1308, 26 3 152,21 | Coal: 1.20 tre/10,000 bee Power: 0.071 tre/10,000 | | | | | 1)Renewing process equipment Replace the whord rolls crusher with Type 6 800 + 400 hierards fine rolls to climituse the fine nodules in the clay and to control the raw material finences. Replace the Type 350 extruder with Type IZK45/40 two hange vacuum, extruder to ark the clay and the intering fuel over. Replace the column outer, with vertical column by 10% interduce 1 at of leader to reduce taken and increase production efficiency. | | | Connercial Ioau Entrustment Loan Self- Plinding | 44.03610 | The | Paybac geriod IRR NP¥ | k 3.05 38.52 60.88 | year % ¥10,000 | | Coal: Power: | 0.95 tce/10.0 bce 0.063 tce/10.0 bce | | | 1) In constant year in m 2004 2)The data in Business Profile column cornes from field investigation. 3)Phinica quantity of energy consumption comes from the Feasibility Report. 4)Conversion formula, that is Conversion factor - Factual calorific value of fact/ Calorific value of coal |
| | | This plant was natablished as a collectively owned plant in 1986 It occupies an area of over 107 row (1xm +1/3 botace). Prior to botace). Prior to botace). Prior to the project, the plant has fixed 21.48 million bricks (common brick equivalent). While it has fixed anext of 1.74 million RMI Yuan and produces an annual output of 24 (plant) bricks (common brick equivalent). Million the fixed anext of 1.74 million RMI Yuan and produces an annual output of 24 (plant) bricks (common brick equivalent) after removation. At present, the plant employs 87 powel instuding 6 | Process production and equipments: Boxing foeder rollsdouble sha mixertwo-stage vacuum extruder column cutter- green brick cutter adobe transporting machinenatura drying firing in | Internal combustive coal (t) External R combustive coal (t) Power/MTh | 9022. 50 4511. 25 397.38 | 0.1 | 4 1263, 15 9 1308, 26 3 152,27 | Coal: 1.20 tre/10,000 bce Power: 0.071 tre/10,000 | | | | | 1)Renewing process equipment Replace the whord rolls crusher with Type 4 800 400 biespect fine rolls to eliminate the fine nodates in the citay and to control the raw material finences. Replace the Type 350 estructor with Type 12X45340 two stage vacuant estructor to mix the clay and the interior fixed row. Replace the column course with vertical column by 10% interchice 1 set of leader to reduce table and intercase production efficiency. | | | Comercial Ioau Entrustment Loan Self- funding | 44.03610 | The novation | Paybac period IRR NP♥ | k 3.05 38.52 60.88 | уеаг % ¥10,000 | | Coal: Power: | 0.95 tce/10.0 bce 0.063 tce/10.0 bce | | | (1) In Constant year is in 2004 2) The data in Business Brom Beld investigation. 3) Physics quantity of energy decasuraption comes from the Pessibility Report. 4/Convention factor is derived from factor is derived from of fact/ Calorific value of coal equivalent.5) Total |
| | Balice | This plant was entablished as a collectively onwed plant in 1986 It occupies an area of over 107 row (1zuu-1/3 hottare). Privit the project, the plant has fixed zames of 1.2 million Mills that and produces as annual output 21.48 million bricks (common brick equivater). While it has fixed assets of 1.74 million RMI Yuan and produces an annual output of 24 million bricks (common brick equivalent) after ranovation. At protect, the plant employs 87 people including 6 | Process yroduction and equipments: Boxing feeder | Internal combustive coal (t) Extérnál R combustive coal (t) Porer/MTh | 9022.50 4511.25 397.38 | 0.1 | 4 1263. 15 9 1308. 26 3 152.20 | Coal: 1.20 tce/10,000 bce Power: 0.071 tce/10,000 | | | | | 1)Renewing process equipment Replace the short ordis cruster with Prope 6 800 4600 kieseds then robts to climinuse the fine nodules in the clay and to control the raw materia finances. Replace the Type 330 extruder with Type 12X45340 two kage vaccuus extrader to aix the clay and the intersity fuel even. Replace the column course with vertical column by 10%s. Interedisco 1 set of loader to reduce the intersity of loader to reduce the intersity of loader to reduce the intersity of loader to reduce the resolution. | | | Commercial Ioan Entrustwent Loan Self- Punding | 44.03610 re | The novation oject had | Paybac period IRR NPV | k 3.05 38.52 60.88 | year % ¥10,000 | | Coal: Power: | 0.95 tcc/10.0 bcc 0.063 tcc/10.0 bcc | 00 | | 1) In Constant year in m 2004 2)The data in Business Profile column corness from field investigation. 3)Phisics quantity of energy consumption comes from the Feasibility Report. 4)Cenversion factor is derived from formula, that is Conversion factor -#Factual calorific value of fuelt Calorific value of coal equivalent.5)Total investment and GFF |
| | Baling | This plant was natabilished as a collectively oward plant in 1986 It couples an area of over 107 row (1ame/125 bodarce). Froit to the project, the plant has fixed assets of 1.2 million RMB Yuan and produce as annual output of 21.45 million bricks (common brick equivalent). While it has fixed assets of 1.74 million RMI Yuan and produce as annual output of 24 million bricks (common brick, equivalent) after renovation. At protect, the plant renovation. At protect, the plant food RMB Yuawhorth on Sto RMB Yuawhorth on | Process production and equipments: Boxing fooder | Internal combustive coal (t) External fr combustive coal (t) Porer/MTA | 9022.50 4511.25 397.38 | 0.1 | 4 1263. 15 9 1308. 26 3 152.20 | Coal: 1.20 tre/10,000 bce Power: 0.071 tre/10,000 | | | | | 1)Renewing process equipment Replace the whord rolls crusher with Type 4 800 400 hisped firms rolls to climinuse the firm nodules in the clay and to control the raw material finences. Replace the Type 330 extruder with Type IZK45340 two- tage vacuum extrader to ait the clay and the instants faul over. Replace the column outer with vertical column by 10% Introduce the ions of column by 10% Introduce 1 set of leader to reduce labor and increase production editiciency. 2)Ammular kim resources | | | Comercial Joan Entrustment Loan Self- Punding | 44.03610 re pr | The noration oject had been 2005 | Paybac period IRR NP¥ | 4 3.05 38.52 60.88 | усаг % ¥10,000 | 10.000 | Cosl: Power: | 0.95 tce/10.0 bce 0.063 tce/10.0 bce | 00 00 | | (1) In Constant year is in 2004 2) The data in Business Profile column cornes from field investigation 3) Physics quantity of energy consumption comes from the Feasibility Report. 4) Convention formula, that is Conversion factor «Factual advice from formula, that is Conversion factor «Factual advice from of coal of coal equivalent.5) Total investment and GEF |
| | Baling Liston Brick | This plant was natablished as a collectively owned plant in 1986 It occupies an area of over 107 mm (1zm +1/3 botcare). Froit to the project, the plant has fixed azent of 12 million RMB Yuan and produces as annual oxybu of 21.48 million bricks (common brick equivalent). While it has fixed anest of 1.74 million RMM Yuan and produces an assured output of 24 million bricks are plant bricks of the plant exceptoys 87 people including 6 issues the sure that the main the main the average. The main the main the main the main the main the main the main th | Process production and equipments: Boxing feeder rollsdouble sha mixer two-stage vacuum extruder or obtamn outler green brick cutter adobe transporting machine nature drying firing in annufar kiln The main eacerg is consumption | Internal combustive coal (c) Extérnal fr combustive ceal (t) Porer/MTA | 9022. 50 4511. 25 397.38 | 0.1 | 4 1263. 15 9 1308. 26 3 152.21 | Coal: 1.20 tre/10,000 bce Power: 0.071 tre/10,000 bce | | | | | 1)Renewing process equipment Replace the whord rolls crusher with Type & 8003 (400 hispead frame rolls to eliminase the fine nodeles in the clay and to control the raw material finences. Replace the Type 350 subroder with Type JZR 45:40 two- stage vacuum extruder to mix the clay end the interior field research and the column course with vertical column states to reduce the loss of column by 10%s. Interoduce 1 set of loader to reduce habor and increase production efficiency. For the resolution filtering the resolution to the sailed 1 ac of temperature tene was added to amfair kilon. Dramage system | | | Comercial Ioan Entrustment Loan Self- Pünding | 44.03610 re | The novation oject had been 2005- | Paybac period IRR NP¥ | k 3.05 38.52 60.88 | year % ¥10,000 | 10,000 | Coal: Power: | 0.95 tcc/10.0 bcc 0.063 tcc/10.0 bcc | 611 | 47 1.524.4 | (1) If a constant year is in 2004 2) The data in Burineas Profile column corners from field investigation. 3) Phinica quartity of energy consumption cones from the Feasibility Report. 4) Conversion factor is derived from factor is derived from factor is derived from factor is derived from factor is derived from of Self Calorific value of coal equivalent. 5) Total invostment and GEF concess from the generation start affects. |
| | Baling Liucan Brick Plats | This plant was natabilished as a collectively oward plant in 1986 It occupies an area of over 107 run (1saw 1/15 bodarcs). Froit out the project, the plant has fixed assume of 1 2 million bricks (common brick equivalent). While it has fixed assets of 1.74 million RMI Yuan and produces as annual output of 24 nullion bricks (common brick, equivalent) after computed the full output of and complex of the fixed of the million and people and the million full set 20 km 10 subwords on average. The main raw material days and output of the two main | Process production and equipments: Boxing feeder | Internal combustive cosl (1) Extérnál R combustive cosl (1) Porer/ITA | 9022.50 4511.25 397.38 | 0.1 | 4 1263. 15 9 1308. 26 3 152.21 | Coal: 1.20 tre/10,000 bee Power: 0.071 tre/10,000 | 2148 10,000 | 2723.61 | 2.493 | | 1)Renewing process equipment Replace the whord colls crusher with Type 4 800 × 460 hierards fine robts to climinase the fine nodes in the clay and to control the raw material finences. Replace the Type 350 extruder with Type 12K45340 two tage vacuum, extruder to aix the clay and the interior field even. Replace the column outer with vertical column by 10% Introduce the loss of loss of Richards and increase production efficiency. | 53.9601 | 12,000.00 | Commercial Ioau Entrustment Lean Self- Punding | 44.03610 re pr | The movation oject had been 2005. ompleted | Paybac period IRR NP¥ | 4 3.05 38.52 60.85 | уеаг % ¥10,000 | 10,000 2400 commo | Coal: Power: | 0.95 tcc/10.0 bcc 0.063 tcc/10.0 bcc | 611. | 47 1,524.4 | 1) In Constitute year is in 2004 2)The data in Business Profile column cornes from field investigation 3)Phinica quantity of energy consumption cornes from the Feasibility Report, 4/Conversion formula, that is Conversion factors effects a descrifte value of factor is derived from formula, that is Conversion factors effects a descrifte value of coal equivalent.5)Total investment and GEF ocness from the Proposited actual data |
| . 4 | Boling Liscun Brick Plans, Bagino | This plant was natabilished as a collectively owned plant in 1986 It occupies an area of over 107 row (1xm +1/3 botace). Prior to the the project, the plant has fixed azents of 1.2 million RMB Yuan and produces as annual oxyput of 21.48 million bricks (common brick equivalent). While it has fixed anett of 1.74 million RMD Yuan and produces an annual oxyput of 24 splinkn bricks (common brick equivalent) after removation. At present, the plant employs 81 popole instuding 6 tochnical popole and the nalary i BSO RMB Yuan/month on average. The main raw material clay and oxal. The two main renderum ans four profestor the func- tion of an area of the profestor the servence in the main raw material clay and oxal. The two main renderum ans four profestor the func- | Process production and equipments: Boxing foeder rollsdouble sha mixertwo-stage vacuum extruder- ookum cutter- adohe transporting machinenatura dryingfiring in annular kiln The main energy cossumption [1] The robuit 38 | Internal combustive coal (t) Extérnál fr combustive coal (t) Porer/MTA | 9022. 50 4511. 25 397.38 | 0.1 | 4 1263. 15 9 1308. 26 3 152.21 | Coal: 1.20 tre/10,000 bee Power: 0.071 tre/10,000 | 2148 10,000 been | 2723.61 | 2.493 | 6789.9 | 1)Renewing process equipment Replace the whord rolls crusher with Toppe & 8007 who have have not have eliminate the fine nodates in the clay and to control the raw material finences. Replace the Type 350 extruder with Type 12K45340 two angle vacuant extruder to mix the clay end the interfighted row. Replace the lookanen course with vertical column by 10% interdisc 1 art of lookent by 10% interdisc 0 art of lookent by 2)Annutlar kills resovation kills nord wasternoved, rebuilt and saded 1 as of temperature taster was added to anyther kills Drainage system of grane brief, yard was required by | 53.9601 | 12,000.00 | Comercial Ioan Entrustment Loan Self- Punding | 44.03610 re | The servation cject had been 2005. coupled 2005. | Paybac period IRR NPV 03.10 | 4 3.05 38.52 60.88 | усаг % ¥10,000 | 10,000 2400 commo bricks/a | Coal: Power: | 0.95 tce/10.0 bce 0.063 tce/10.0 bce | 00 00 611. | 47 1,524.4 | (1) In constant year in m 2004 2) The data in Burinean Profile column corners from field investigation. 3) Phinica quartity of energy consumption comes from the Feasibility (Report, 4) Conversion factor is derived from factor |
| 4 | Baling Liucan Brick Plans, Baqiao Destrick | This plant was notablished as a collectively oward plant in 1986 It occupies an area of over 107 row (1xm +175 bodarcs). Froit to the project, the plant has fixed assets of 1 a million bricks (common trick equivalent). While it has fixed assets of 1.74 million RMB Yuan and produces an annual output of 24 million bricks (common brick equivalent). While it has fixed assets of 1.74 million RMB Yuan and produces an annual output of 24 million bricks (common brick equivalent) after removation. At pretend, the plant exploys 87 posple involuting 6 technical people and the material city and chart to two main produces are fixed performed bri produces are fixed performed bri produces are fixed performed bri produces are fixed performed bri produces are fixed performed bri to the the second performed bri produces are fixed performed bri produces are fixed performed bri produces are fixed performed bri performed brief of 15.900 million fixed. | Process yroduction and equipments: Boxing feeder rollsdouble sha mixertwo-stage yacuum extruder adobe transporting mechinenatura dryingfiring in annular kiln The main energ is consumption 1)The rebuit 38 de chambers annula | Internal combinitive coal (2) Extérnál R combinitive coal (2) Porer/IMA | 9022.50 4511.25 397.38 | 0.1 | 4 1263. 15 9 1308. 26 3 152.21 | Coal: 1.20 tre/10,000 bee Power: 0.071 tre/10,000 | 2148 10,000 been | 2723.61 | 2.493 | 1. | 1)Renewing process equipment Replace the whord rolls crusher with Type 6 800 + 400 hierards fine rolls to climituse the fine nodes in the clay and to control the raw material finences. Replace the Type 350 extruder with Type 12X45340 two hage vacuum, extruder to ark the clay and the interview fuel event. Replace the column outer with vertical column by 10% interdice the issue of column by 10% interdice the issue of column by 10% interdice the one of column by 10% interdice the issue of column by 10% interdice the one of column by 10% interdice 1 at of leader to reduce labor and increase production efficiency. | \$3.9601 | 12,000.00 | Commercial Ioan Entrustmenc Loan Self- Punding | 44.03610 re pr | The novation oject had been 2005. ompleted - ecording 2005. to the | Paybac period IRR NP¥ | 4 3.05 38.52 60.88 | year % ¥10,000 | 10,000 2400 common bricks/a | Coal: Power: | 0.95 tcc/10.0 bcc 0.063 tcc/10.0 bcc | 00 00 611. | 47 1,524.4 | (1) If a constant year is in 2004 2) The data in Business Profile column corress from field investigation. 3) Phinica quantity of energy consumption comes from the Feasibility Report. 4) Conversion formula, that is Conversion factor Factual calorific value of acid / Calorific value of coal investment and GEF ocenes from the proposited actual data (s) Physhex period, IE2 and NPV is calibrated |
| | Baling Liucian Brick Plan, Bagiao Dustick, Su' an | This plant was natabilished as a collectively oward plant in 1986 It occupies an area of over 107 row (lawe 1/3 bodarcs). Prior to the project, the plant has fixed assets of 1.2 million RMB Yuan and produce as annual onlype of 21.45 million bricks (common brick equivalent). While it has fixed assets of 1.74 million RMI Yuan and produces an annual output of 24 million bricks (common brick, equivalent) after removation. At present, the plant employs 87 people instuding, 6 too RMB Yuan/month on average. The main faw material clay and coal. The two main produces are fixed performated by (module 240 +115-900) and firm (undule 240 +115-900 and (undule 240 +115-900 and firm (undule 240 +115-900 and (undule 240 +115-900 and | Process production and equipments: Boxing fooder | Internal combustive coal (t) External fr combustive coal (t) Porer/MTA | 9022. 50 4511. 25 397.38 | 0.1 | 4 1263. 15 9 1308. 26 3 152.21 | Coal: 1.20 tre/10,000 bce Power: 0.071 tre/10,000 | 2148 10,000 bic/a/ | 2723.61 | 2.483 2.483 | 6 78 3.9 | 1)Renewing process equipment Replace the whord rolls crusher with Toppe & 800 viewood file crusher with the second of the rank merelin to climinuse the fime nodules in the clay and to control the raw material finences. Replace the 700 root stage vacuum estimates the clay and the instants faul even. Replace the column outer with vertical column by 10% Introduce the loss of column by 10% Introduce 1 set of leader to reduce labor and increase production editiciency. The removed nobilit and seeded 1 as of temperature taster was added to ensular kin brainage system of green brief yard was replaced by increasing height of hack to reduce the loss of green brick when rainy weather on heavy rain. I use of Type ZEAS | 53.9601 | 12,000.00 | Comercial Joan Entrustment Loan Self- Punding | 44.03610 re pr | The novation oject had been 2005. confing 2005. to the coluicat | Paybac period IRR NPV 03.10 78.31 Cost o | k 3.05 38.52 60.85 | year % ¥10,000 | 10,000 2400 commo bricks/a | Coal: Power: | 0.95 tcc/10.0 bcc 0.063 tcc/10.0 bcc | 00 00 | 47 1,524.4 | (1) In Constant year is in 2004 2) The data in Business Profile column cornes from field investigation 3) Phisics quantity of energy consumption comes from the Feasibility Report. 4/Convention feator is derived from fearmula, that is Conversion factor -farctual activity name of coal of fatty Calorific value of coal equivalent.5) Total investment and GEF operational data .6) Fayback period, RE on the basic data after on the basic data after on the basic data after |
| | Baling Liucan Brisk Plans, Baqino Custrict, Xu' an | This plant was entablished as a collectively oward plant in 1986 It occupies an area of over 107 row (1xm+1/3 hottare). Prive to the project, the plant has fixed summer of 1, and filling hottare. Prive hottare and an analysis of prive againstant, while it has fixed assets of 1.74 million RMB Yuan and produces an assual output of 24 million bricks (common brick optivalent) afther renovation. At present, the plant employs 87 people including 6 totalized poople in the two main produces are find professional brick (contact appeople and the material city and coal the two main produces are find performed brit produces are find performed brit. (module 240+115-90) and firm hollow brick (module 240+240) 240. The first brites in the the first set of the set of the hollow brick (module 240+240) and the prive the two main hollow brick (module 240+240) and the first set of the set of the hollow brick (module 240+240) and the the set of the set of the hollow brick (module 240+240) and the set of the set of the hollow brick (module 240+240) and the set of the hollow brick (module 240+240) and the set of the set of hollow brick (module 240+240) and the set of the set of hollow brick (module 240+240) and the set of hollow brick (module 240+240) and hollow brick | Process yroduction and equipments: Boxing feeder rollsdouble sha mixertwo-stage yrocum extruder adobe transporting machinenature dryingfiring in annular kiln The main energy consumption 1)The rebuil 38 de chambers annulas tuln 2)Boxing Feeder 3)Cinder | Internal combative coal () Extêrnál R combative coal (t) Porér/Mh | 9022.50 4511.25 397.38 | 0.1 | 4 1263. 15 9 1308. 26 3 152.21 | Coal: 1.20 tre/10,000 bee Power: 0.071 tre/10,000 bee | 2148 10,000 2148 bce/a./ | 2723.61 | 2.433 | 6 789.9 | 1)Renewing process equipment Replace the shord rolls crusher with Prop & 800 + 600 hierards fine rolls to climinuse the fine nodules in the clay and to control the raw material finances. Replace the Type 330 extruder with Type 12X45340 two hange vacours extrader to mix the clay and the interview fuel rever. Replace the column course with vertical column by 10%s. Introduce 1 at of leader to reduce the loss of column by 10%s. Introduce 1 at of leader to reduce the resolution efficiency. 2)Amultar kills removation efficiency. 2)Amultar kills removation of grans brick when caine weather or heavy rain 1 at of Type ZE3-8 mergy convention blows was | 53.9601 | 12,000.00 | Comercial Ioan Entrustwent Loan Self- Punding Financial | 44.03610 re pr co t | The novation yeach had been 2005. onyleted - coording 2005. to the column | Paybac period IRR NPV 03.10 78.31 Cost 6 | k 3.05 38.52 60.85 | year % ¥10,000 | 10,000 2400 commo bricks/a | Coal: Power: | 0.95 tcc/10.0 bcc 0.063 tcc/10.0 bcc | 00 00 00 01 01 01 01 01 01 01 01 01 01 0 | 47 1,524 | 1) In Constant year in m 2004 2)The data in Business Profile column corress from field investigation. 3)Phisics quantity of energy consumption comes from the Feasibility Report. 4)Cenversion factor is derived from farmile, that is Conversion factor =Factual calorific value of coal countries from factor reported actual data (5)Psychet. 5)Total investment and GEF coents from the reported actual data. (5)Psychet. 7)Erest and PTV is calibrated. |
| | Baling Liyeun Brick Plans, Bagio Districk Xu' an | This plant was natabilished as a collectively oward plant in 1986 It occupies an area of over 107 row (1xm+1/3 bodarcs). Friet to the project, the plant has fixed assets of 1.2 million RMB Yuan and produces as annual oxippe of 21.48 million bricks (common brick equivalent). While it has fixed assets of 1.74 million RMB Yuan and produces as annual output of 24 million bricks. (common brick, equivalent) after renovation. At pretend, the plant exceptoys 87 people including 6 toolastical people and the malary is 800 RMB Yuanwhorth on average. The matin raw material clay and coal. The two main (module 240 +115-90) and firm fullower brick (module 240 +2415-90) and firm fullower brick (module 240 +241-241). The price of the performate to average. | Process yroduction and equipments: Boxing fooder | Internal combustive coal (t) External R combustive coal (t) Porer/WTA | 9022.50 | 0.1 | 4 1263. 15 9 1308. 26 3 152.20 | Coal: 1.20 tre/10,000 bce Power: 0.071 tre/10,000 bce C c energy 1.27 tre/10,00 coans | 2148 10,000 2148 beers | 2723.61 | 2.493 | 6789.9 | 1)Renewing process equipment Replace the whord rolls crusher with Type 4 800 × 460 hierards fine rolls to climinuse the fine nodules in the clay and to centrol the raw material finences. Replace the Type 330 estructor with Type 12X45340 two- tage vacuum estructed to attic the clay and the interve field over. Replace the column outer with vertical column by 10% Introduce the loss of column by 10% Introduce to finance outer to reduce labor and increase production efficiency. \$ 2)Amatlar kijn renovation Kijn roof wasternoved, roboth and actical to constar kin. Drainage system added to ensular kin. Drainage system of green brick when rainy weather to have rain 1 at of Type ZF34 energy convisation blower was introduced. | 53.9601 | 12,000.00 | Commercial Joan Entrustment Lean Self- Punding Financial Assistance | 44.03610 re pi co st | The novation oject had been 2005. config 2005. to the columnation plan. | Paybac period IRR NPV 03.10 58.31 Cost (energ) | k 3.05 38.52 60.88 | year % ¥10,000 | 10,000 2400 commo bricks/a | Power: | 0.95 tcc/10.0 bcc 0.063 tcc/10.0 bcc 1.01 tcc/10.0 bcc | 00 00 611. 000 | 47 1,524.4 | (1) In constant year in m 2004 2)The data in Business Profile column cornes from field investigation 3)Phisics quantity of energy consumption cornes from the Feasibility Report, 4/Conversion formula, that is Conversion factors formula, that is Conversion factors formula, that is Conversion factor formula, that is Conversion factor factor is derived from formula, that is Conversion factor factor is derived from formula, that is Conversion factor formula, that is Conversion for form the Derive data affor free basic data affor renovation 7)Energy gorgamptic of unit |
| 4 | Baling Liucun Brick Prink, Bagino Districk, Su ⁺ an | This plant was entablished as a collectively owned plant in 1986 It occupies an area of over 107 row (1xm+1/3 hottare). Privit the project, the plant has fixed zames of 1.2 million kinks in the plant and produces as annual output 21.48 million bricks (common brick equivater). While it has fixed assets of 1.74 million RMI Yuan and produces an annual output of 24 million bricks (common brick equivalent) after renovation. At pretect, the plant employs 87 people including 6 tochards and the mane random sociatical people and the malary 860 RMI Yuan/month on average. The main faw material chay and coal. The two main produces are find performate in 0.40 RMI Yuan/month on the price of the performance in 0.40 RMI yuan/month on average. The main faw material chay and coal. The two main produces are find performance in 0.40 RMI yuan/month on the price of the performance in 0.40 RMI yuan/month on average. The main faw material chay and coal. The two main produces are find performance in 0.40 RMI yuan/month on average. The price of the performance in 0.40 RMI yuan/month on average. The price of the performance in 0.40 RMI yuan/month on average. The price of the performance in 0.40 RMI yuan/month on average. The price of the performance in 0.40 RMI yuan/month on average. The price of the performance in 0.40 RMI yuan/month on average. The price of the performance in 0.40 RMI yuan/month on average. The performance average. The performance avera | Process production and equipments: Boxing feeder | Internal combative coal (2) Externál n combastive coal (2) Porer/WTA | 9022.50 4511.25 397.38 | 0.1 | 4 1263. 15 9 1308. 26 3 152.27 | Coal: 1.20 tre/10,000 bee Power: 0.071 tre/10,000 bee C. C. C. C. C. C. C. C. C. C. C. C. C. | 2148 10,000 2148 bioin | 2723.61 | | 6789.9 | 1)Renewing process equipment Replace the short ordis cruster with Prope 6 800 4600 kieseds then robts to eliminase the fine nodes in the elay and to control the ruw materia finances. Replace the Type 330 extruder with Type 12X45340 two kage vaccurs extrader to mix the elay and the intersity fuel even. Replace the column course with vertical column course to reduce the ison of column by 10%s. Introduce 1 at of loader to reduce the intersity fuel even, Replace the column course with vertical column by 10% introduce to its of loader to reduce the main research production efficiency. 2)Annular kin resolution added to any its resolution of grans brick yard was repaired by increasing height of hack to reduce the loss of green brick when cany weather or heavy can't 1 at of Type ZE3-8 menty conventions | 53.9601 | 12,000.00 | Commercial Ioan Entrustment Loan Self- Punding Financial Assistance | 44.03610 re pr cc # | The movation oject had been 2005. ompleted - coording 2005. to the cefunicat plan. | Paybac period IRR NPV 33.10 58.31 Cost 4 savio | k 3.05 38.52 60.85 130.67 | year % ¥10,000 ¥1/tee | 10,000 2400 commo bricks/a | Coal: Power: | 0.95 tcc/10.0 bcc 0.063 tcc/10.0 bcc 1.01 tcc/10.0 bcc | 00 00 01 01 01 01 01 01 01 01 01 01 01 0 | 47 1,5244 | (1) If a constance year is in 2004 2) The data in Burineas Profile column corners from field investigation. 3) Phinica quartity of energy consumption comes from the Feasibility Report, 4) Convention factor is derived from factor is derived from of fuel/ Calorific value of coal equivalent.5) Total investment and GEF corners from the 0 recovated actual data for renovation actual data of the VV is calibrated on the basic data after renovation.7) Energy communities from the preduct comes from the renovation.7) Energy communities of units. |
| 4 | Baling Liucun Brick Plars, Baqino Chetrici, Su' an | This plant was natabilished as a collectively oward plans in 1986 It occupies an area of over 107 run (1saw 1/15 bodarcs). Froit out the project, the plant has fixed assume of 1 2 million bricks (common brick equivalent). While it has fixed assets of 1.74 million RMI Yuan and produces as annual output of 21.48 million bricks (common brick equivalent). While it has fixed assets of 1.74 million RMI Yuan and produces an annual output of 24 million bricks (common brick, equivalent) after envolution. At pretench, the plant employs 87 people involuting 6 totalated people and the milary it 800 RMI Yuanbonth on average. The main raw material city and coast. The two main products are fired performed bri; (modale 240 - 115-901) and fire hollows brick (sub) 240 - 240 1135. The price of the performance at 0.400 RMIB Yuan/pices and th perforation rate is over 25%. The | Process production and equipments: Boxing feeder | Internal combustive coal (1) Extérnál R combustive coal (1) Porer/INTA | 9022.50 4511.25 397.38 | 0.1 | 4 1263. 15 9 1308. 26 3 152.24 2723.6 | Coal: 1.20 tre/10,000 bee Power: 0.071 tre/10,000 bee C c energy 1.27 tre/10,00 bee ptice | 2148 10,000 2148 beers./ | 2723.61 | 2.493 2.493 | 6189.9 | 1)Renewing process equipment Replace the whord colls crusher with Type 6 800 - 4600 hierards fine robus to climinuse the fine nodules in the clay and to control the raw material finences. Replace the Type 350 estructor with Type 12K45340 two- tage vacuum, estudent to aik the clay and the interior field even. Replace the column cases with vertical column by 10% Introduce the loss of loss of of genes hird; ward was repaired by increasing height of hack to reduce the loss of grees prick when can by wetther or heavy rain. 1 us of Type ZE5-8 energy convention belower was introduced. | 53.9601 | 12,000.00 | Commercial Ioau Entrustment Lean Self- Punding Financial Assistance | 44.03610 ré pr cc u | The novation oject had been coording coording 2005. to the echnicat plan. | Paybac period IRR NPV 03.10 | k 3.05 38.52 60.85 | year % ¥10,000 | 10,000 2400 common bricks/a | Coal: Power: Coal: Coal: Power: Coal: Power: Coal: Power: Coal: Power: Coal: | 0.95 tcc/10.0 bcc 0.063 tcc/10.0 bcc 1.01 tcc/10.0 1.01 tcc/10.0 bcc | 00 00 611 611 | 47 1,524.4 | (1) In constant year in m 2004 2)The data in Business Profile column cornes from field investigation 3)Phinical quantity of energy consurgation cornes from the Feasibility Report. 4)Conversion formula, that is Conversion factor formula, that is Conversion factor formula, that is Conversion factor for data (Calorific value of coal equivalent, 5)Total investment and GEF contest from the D repovated actual data (5)Phyback period, RE and NPV is calibrated on the basic data after networks of 2.Paragy communities of unit product comes from the actual determination. |
| 4 | Boling Livean Bride Dearict Xu' an | This plant was natabilished as a collectively oward plant in 1986 It occupies an area of over 107 row (1xm +1/3 botace). Prior to the project, the plant has fixed azosto of 1.2 million RMB Yuan and produces as atmal output of 21.45 million bricks (common brick equivalent). While it has fixed assets of 1.74 million RMI Yuan and produces an atmutal output of 24 million bricks (common brick, equivalent) after renovation. At protect, the plant average. The main raw material outputs of 24 million throws a varrage. The main raw material clay and coal. The two main produces are fixed performato bri- (module 240 + 115 + 90) and firm hallow brick (module of the performa- tio BAB Yuan/pices and the performantion rate in over 25%. The performance is 1.00 RAB Yuan/pices and the performance in 1.00 RMB Yuan/pices and the performantion rate in over 25%. The performance is 1.00 RAB Yuan/pices and the performance in the policy in 1.00 RAB Yuan/pices and the performance in the prior of the hollow is 1.00 RAB Yuan/pices and the performance in the prior of the hollow is 1.00 RAB Yuan/pices and the performance in the prior of the hollow is 1.00 RAB Yuan/pices and the performance in the prior of the hollow is 1.00 RAB Yuan/pices and the performance in the performance in the performance in the follow is 1.00 RAB Yuan/pices and the performance in the follow is 1.00 RAB Yuan/pices and the performance in the hollow is 1.00 RAB Yuan/pices and the performance in the hollow is 1.00 RAB Yuan/pices and the performance in the performance | Process production and equipments: Boxing fooder | Internal combustive coal (t) External fr combustive coal (t) Porer/MTA | 9022.50 | 0.1 | 4 1263. 15 9 1308. 26 3 152.21 | Coal: 1.20 tre/10,000 bee Power: 0.071 tre/10,000 bee C C energy 1.27 tre/10,00 bee ption | 2148 10.000 been | 2723.61 | 2.483 | 6789.9 | 1)Renewing process equipment Replace the whord rolls crusher with Toppe 4 800 460 biespeed frame rolls to eliminase the fine nodules in the clay and to control the raw material finences. Replace the Type 350 entruder with Type 12X45340 two- stage vacuum extruder to entix the clay end the intering fuel even. Replace the column outer with vertical column by 10% Interchape 1 set of loader to reduce labor and increase production efficiency. I set of loader to reduce labor and increase production efficiency. I set of loader to reduce to the set of could be the 2)Amular kin renovation Kin noof warremoved, rebuilt and seddel is of temperature tester was added to annifar kin. Drainage system of green brick yand was repaired by increasing height of hack to reduce the load of green brick when cainy weather on heavy rain. I set of Type 2Es 54 energy convertation blower was introduced [] Natroduces [] | 53.9601 | 12,000.00 | Comercial Ioan Entrustment Loan Self- Punding Financial Assistance | 44.03610 re p | The sevention oject had been 2005. to the echnical plan. | Paybac geriod IRR NPV 03.10 | k 3.05 38.52 60.88 | year % ¥10,000 ¥1/te4 | 10,000 2400 commo bricks/a | Coal: Power: | 0.95 tce/10.0 bce 0.063 tce/10.0 bce 1.01 tce/10.0 bce | | 47 1,524.4 | (1) In constant year in m 2004 2)The data in Butiness Profile column corners from field investigation. 3)Phinica quartity of energy consumption comes from the Feasibility Report, 4/Conversion factor is derived from factor is derived from of fuel Calorific value of coal nevertuent and GEF consets from the repovation facts and fata 6)Payback period, IEI and NTV is calibrated on the basic data after repovation of unit peeduct comes from the actual deterministion. |
| 4 | Baling Liyean Brick Başino Derrict, Xu' an | This plant was notablished as a collectively oward plant in 1986 It occupies an area of over 107 row (1xm+17) bodarcs). Froit to the project, the plant has fixed assets of 1 a million bricks (common trick equivalent). While it has fixed assets of 1.74 million RMI Yuan and produces an annual output of 24 million bricks (common brick equivalent) after renovation. At pretend, the plant exploys 81 posple involving 6 isoloxim B to two main products are fired performed bri (module 240×115×90) and fires hollow brick (module 240×240 113). The price of the performance is 0.40 RMB Yuan/jose and the performance is 0.40 RMB Yuan/jose | Process yroduction and equipments: profuction and equipments: rollsdouble sha mixertwo-stage yrocum extruder adobe transporting mechinenatura dryingfiring in annular kiln The main energy is cossumption 1)The rebuit 38 detambers annula tiln 2)Boxing feored \$2/Sinder drying-firing firing the rolls \$2/Sinder dd dd firing \$2/Sinder for rolls \$2/Sinder f | Internal combustive coal (2) External R combustive coal (2) Porer/INTh | 9022.50 4511.25 397.38 | 0.1 | 4 1263. 15 9 1308. 26 3 152.20 | Coal: 1.20 tre/10,000 bee Power: 0.071 tre/10,000 bee Power: 0.071 tre/10,000 bee power: 0.071 tre/10,000 bee price 1.27 tre/10,000 bee | 2148 10,000 beisa/ | 2723.51 | 2.493 | 6 789.9 | I Renewing process equipment Replace the shord rolls crusher with Pype 6 800 + 400 hierards fine rolls to climinuse the fine nodes in the clay and to control the raw material finences. Replace the Type 350 extruder with Type IZK45340 two hange vacuum, extruder to ark the clay and the interview fuel event. Replace the column outer with vertical column by 10% interdio the issue of column added to any mitter kin. Denimage system of graon brick yard was repaired by increasing height of hack to robuce the loss of grees brick when caing weather or heavy rain 1 set of Type ZE5.8 energy convertices blower was introduced. 3) Antroducing electric equipments Transdoor was constant. | 53.9601 | 12,000.00 | Commercial Ioan Entrustwenc Loan Self- Punding Financial Assistance | 44.03610 re pr c t | The movation oject had been 2005. ompleted - scording 2005. to the echnicat plan. | Paybac period IRR NPV 03.10 78.31 Cost 4 energ savin | k 3.05 38.52 60.85 | year % ¥10,000 | 10,000 2400 common bricks/a | Coal: Power: | 0.95 tcc/10.0 bcc 0.063 tcc/10.0 bcc 1.01 tcc/10.0 bcc | | 47 1,524 | 1) In Constant year in m 2004 2)The data in Business Profile column corners from field investigation. 3)Phinica quantity of energy consumption comes from the Feasibility Raport. 4)Conversion factor is derived from formula, that in Conversion factor =Factual calorific value of doal? Calorific value of coal aspirybates.5)Total investment and GEF ocontes from the reported actual data after reported actual data after reported actual actual deterministion. |
| 4 | Baling Liucan Beita Darric, Xu' an | This plant was notablished as a collectively oward plant in 1986 It occupies an area of over 107 row (1xm+1/3 bodarcs). Friet to the project the plant has fixed assets of 1.2 million RMB Yuan and produce as annual output of 21.48 million bricks (common brick equivalent). While it has fixed assets of 1.74 million RMI Yuan and produce as annual output of 24 million bricks (common brick equivalent) after renovation. At protect, the plant renovation are produce as annual output of the projet instuding, 6 too RMB Yuan/moth on average. The main raw material clay and coal. The two main produces are (find performated bit in 135). The price of the performance is 0.408 RMB Yuan/piece and the performation rate in over 2584. The price of the holiow is 1.00 RME Yuan/piece and the performation meet is 0.408 RVan/s Aa neuritio | Process production and equipments: Boxing fooder rolsdouble sha mixertwo-stage vacuum extinder | Internal combustive coal (2) External fr combustive coal (4) Power/WTA | 9022.50 | 0.1 | 4 1263. 15 9 1308. 26 3 152.21 | Coal: 1.20 tre/10,000 bee Power: 0.071 tre/10,000 bee C C energy 1.27 tre/10,00 comme plice | 2148 10,000 bicir_J | 2723.61 | 2.493 | 6789.9 | 1)Renewing process equipment Replace the whord rolls crusher with Tope 4 800 460 hisped fine rolls to climinuse the fine nodules in the clay and to centrol the raw material finences. Replace the Yay 300 entrolse with Ype 12X45340 two- tage vacuum estrated to aint the clay and the interior faul over. Replace the column outer with vertical column by 10% Introduce the ions of column by 10% Introduce 1 et of leader to reduce labor and increase production efficiency. A set of leader to reduce labor and increase production efficiency. A set of leader to reduce to the set of column by 10% Introduce 1 et of leader to reduce to the set of leader to reduce to set in the set of leader to reduce the set of the set of leader to reduce to set in the set of leader to reduce the set of the set of leader to reduce the set of the set of leader to the set of the set of the set of the set introduced. [3] Materials the set of the line set of the set of leader to added to entitle the set of leader the introduced. [3] Materials the set of the set of the set of a set of the set of leader to the set of the set of the set of the set of the set of the set of the set of the set of the set of green brick when camp wetther there are compensate to was added to entitled. | 53.9601 | 12,000.00 | Commercial Joan Entrustment Lean Self- Punding Financial Assistance | 44.03610 pr pr ca | The novation oject had been 2005. completed – coording 2005. to the columnation plan. | Paybac period IRR NPV 93.10 53 | k 3.05 38.52 60.85 130.67 | year % ¥10,000 | 10,000 2400 commo bricks/a | Coal: Power: | 0.95 tcc/10.0 bcc 0.063 tcc/10.0 bcc 1.01 tcc/10.0 bcc | 00 00 611. | 47 1,524.4 | () If a constant year is in 2004 2) The data in Buriceast Profile column corners from field investigation. 3) Phinica quartity of energy consumption conces from the Feasibility Report. 4/Conversion factor is derived from factor is derived from factor is derived from Conversion factor =#actual calorific value of faut/ 2016/first value of faut/ 2016/fir |
| 4 | Boling Livean Beite Dasito Dueriet, Xu' an | This plant was entablished as a collectively oward plant in 1986 It occupies an area of over 107 row (Izaw-175 bodarcs). Prior to the project, the plant has fixed assumes of 1, 2 million bricks (common brick equivalent). While it has fixed assets of 1.74 million RMI Yuan fixed seates of 1.74 million RMI Yuan and produces an assumal output of 24 million bricks (common brick equivalent) after renovation. At present, the plant exclusion prick equivalent) after renovation. At present, the plant exclusion prick equivalent) after renovation. At present, the plant exclusion project and the material fixed assets are first and the material fixed material fixed preformation in 0.40 RMB Yuan/month on average. The main taw material clay and coal. Inf 5-901 and fire moliose brick (module 240 v240 113). The price of the performation in 0.40 RMB Yuan/pixes and the performation rate in over 25%. The price of the holiow in 1.00 RME Yuan/pixee and the performance ments areas yields (audity) | Process production and equipments: Boxing feeder | Internal combustive coal (s) Externál R combustive coal (s) Preir/WTh Preir/WTh Sum total | 9022.50 | 0.1 | 4 1263. 15 9 1308. 26 3 152.21 | Coal: 1.20 tre/10,000 bee Power: 0.071 tre/10,000 bee D Coal: 1.20 tre/10,000 bee D Coal: 1.20 tre/10,000 bee D Coal: 1.20 tre/10,000 bee D Coal: 1.20 tre/10,000 bee | 2148 10,000 bera/ | 2723.61 | 2.433 | 6 789.9 | I Menewing process equipment Replace the short ordite crusher with Pype 6 800 - 4600 hierped firm robs to climinuse the firme nodes in the clay and to control the raw material finances. Replace the Type 330 extruder with Type 12K45340 two hange vacuum extruder to mix the clay and the interfug fuel (new, Replace the column outer, with vertical column by 10% interdisc 1 set of leader to reduce taken and increase production efficiency. 2)Annular kilm renovation (kilm roof westremoved, reducit and sadded to angular kilm. Drainage system of graen brid: yard was repaired by increasing height of hack to reduce the loss of grees brick when cainy weather or heavy cain; 1 set of Type ZE3-6 mergy conventions blower was introduced. 3)Annucle discuster augustual transduced in electric equipments Transducer wis added to kilm blower. And non-power compensator was addel to entrider. | 53.9601 | 12,000.00 | Commercial Ioan Entrustwent Loan Self- Punding Financial Assistance | 44.03610 re pr cr t | The novation yeach had been 2005. ompleted - coording 2005. to the cohnical plan. | Paybac period IRR NPV 03.10 78.31 Cost 1 savin | k 3.05 38.52 60.85 | year % ¥10,000 | 10,000 2400 commo bricks/a | Coal: Power: Coal: | 0.95 tcc/10.0 bcc 0.063 tcc/10.0 bcc | | 47 1,524 | 1) In Constant year in m 2004 2)The data in Business Profile column corress from field investigation. 3)Phisics quantity of energy consumption comes from the Feasibility Report. 4)Cenversion factor is derived from formula, that is Conversion factor -Factual calorific value of coal countries from factor reported actual data. 6)Physheet Point Ref reported actual data after reported actual data after reported actual data after reported actual data after predict const from the actual deterministion. |
| 4 | Baling Liutan Bridt, Bajko Duerid, Xu' an | This plant was natabilished as a collectively oward plant in 1986 It occupies an area of over 107 row (1xm +175 bodarcs). Froit or the project, the plant has fixed anneats of 1.2 million EMB Yuan and produces as annual output of 21.48 million bricks (common brick equivalent). While it has fixed assets of 1.74 million RMB Yuan and produces as annual output of 24 million bricks (common brick, equivalent) after renovation. At pretend, the plant exploys 87 people including 6 isoclassical people and the millary i 800 RMB Yuan/month on average. The main raw material chay and coal. The two main (module 240 +115-90) and firm hollow brick (module 240 +240 1135. The price of the performation is 0.400 RMB Yuan/pices and the perforation rate in over 25%. The price of the hollow is 1.400 RME Yuan/pice and the performa- tion, brick quality improved and the acceptance to | Process production and equipments: Boxing fooder=- rolls=-double sha mixer=-two-stage vacuum extruder column outlee- adobe machine=-natura dying=-firing in annular-kiln The roain energy is consumption I)The robait 38 det alth 2)Boxing fooder 3)Cinder erusher 4)H5-spo fine rolls 5)Doub shaft mixer 6)Tw stage vacuum extruder 7)Colure extinder 3)Colure | Internal combustive coal (t) External R combustive coal (t) Porer/WTA | 9022.50 | 0.1 | 4 1263. 15 9 1308. 26 3 152.20 | Coal: 1.20 tre/10,000 bee Power: 0.071 tre/10,000 bee Coast 1.27 tre/10,000 bee 1.27 tre/10,000 bee ptica | 2148 10,000 Decin./ | 2723.61 | 2 .49 3 | 6789.9 6789.9 | I Renewing process equipment Replace the whord colls crusher with Type 4 800 × 460 hierards fine robus to timinase the fine nodules in the clay and to control the raw material finences. Replace the Type 330 structor with Type 12K45340 two- tage vacuum settradet to aits the clay and the interve field over. Replace the column outer with vertical column by 10% Introduce the loss of column by 10% Introduce the loss of column by 10% Introduce the loss of column by 23, matter is intervance production efficiency. I set of loader to reduce labor and increase production efficiency. I set of loader to reduce tabor and increase production efficiency with areas production of grane brick when chips wystem of grane brick when chips wystem to heavy cain. I us of Type ZE3-8 energy convention to lower was introduced. 3)Antroducing electric equipments Transducer was added to kiln blower. And non-prove compensator was added to contrider. | 53.9601 | 12,000.00 | Commercial Ioau Entrustment Lean Self- Punding Financial Assistance | 44.03610 Př Q U U U U U U U U U U U U U U U U U U | The movation oject had been coording coording coording conting plan. | Paybac period IRR NPV 28.31 Cost 4 savio | k 3.05 38.52 60.85 130.67 | year % ¥10,000 | 10,000 2400 common bricks/a | Coal: Power: Coal: Power: Coal: Power: Coal: Power: Coal: Power: Coal: Power: Coal: Power: Coal: Power: Coal | 0.95 tcc/10.0 bcc 0.063 tcc/10.0 bcc 1.01 tcc/10.0 bcc | | 47 1,524.4 | (1) In caseline year is in 2004 2)The data in Business Profile column cornes from field investigation 3)Phinical quantity of energy consurgation cornes from the Feasibility Report. 4/Conversion formula, that is Conversion factor formula, that is Conversion factor of and Colorific value of coal equivalent.5)Tetal investment and GEF cornes from the D recovated actual data 6)Phyback periol. (Ei) and NPV is calibrated on the basic data after recovation of Langerice, 12 factor y consumption of unit product comes from the actual deterministion. |
| 4 | Baling Liucan Brick Plan, Başiao Darist, Xu' ən | This plant was established as a collectively owned plant in 1986 It occupies an area of over 107 mm (Izau-125 hottare). Prive to the project, the plant has fixed assumes of 1.2 million bricks (common brick equivalent). While it has fixed assets of 1.74 million RMB Yuan fixed assets of 1.74 million RMB yuan fixed assets of 1.74 million RMB yuan output of 24 million bricks (common brick equivalent). While it has removation. At present, the plant employs 87 people instelling for totalized poople instelling for totalized poople instelling for totalized poople and the material company 87 people instelling for totalized poople and the material collay and coal. The two main produces are first poor and protoces are first poor hold NMB Yuan/month en average. The main fraw material clay and coal. The two main produces are first poor first of the hold you is 1.00 RMB yuan/piece and the performation in 0.40 RMB yuan/month en aver 37%. As a reach of renovation, brick quality improved and the acceptance ra increases from 35% to 1935. Mills | Process production and equipments: Boxing feeder | Internal combustive coal (2) Externál R combustive coal (2) Porer/WTA | 9022.50 | 0.1 | 4 1263. 15 9 1308. 26 3 152.27 | Coal: 1.20 tre/10,000 bee Power: 0.071 tre/10,000 bee Decentry 127 tre/10,00 consom ptice | 2148 10,000 been | 2723.61 | 2.433 | 6 6 7 7 8 7 8 7 8 7 8 7 8 7 8 7 8 7 8 7 | I Menewing process equipment Replace the shord rolls crusher with Prop & 800 + 600 hierards fine rolls to eliminase the fine nodules in the elay and to control the raw material finances. Replace the Type 330 extruder with Type 12K45340 two fange vaccund extrader to anis the elay and the intervery fast (even, Replace the column courts' with vertical column by 10%s. Introduce the ions of column by 10%s. Introduce to any of column by 10%s. Introduce 1 at of leader to reduce the intervery fast (even, Replace the column courts' with vertical column by 10%s. Introduce 1 at of leader to reduce their resolution efficiency. 2)Amular (in renovation of green brick year on any explane of green brick year on any explane of green brick when rainy weither or heavy rain 1 at of Type ZE3-8 mergy conventions blower was introduced. 2)Annucless (electric equipments Trandoce win added to kin blower. And non-power compensator was added to consider. | 53.9601 | 12,000.00 | Commercial Ioan Entrustment Loan Self- Punding Financial Assistance | 44.03610 re pr cc # | The novation oject had been 2005. onpleted - corording 2005. to the certinicat plan. | Paybac period IRR NPV 38.31 Cost 4 savin | k 3.05 38.52 60.85 130.67 | year % ¥10,000 ¥1/tee | 10,000 2400 commo bicks/s | Coal: Power: Power: Coal: Power: Coal: Coa | 0.95 tcc/10.0 bcc 0.063 tcc/10.0 bcc | 00 00 00 00 00 00 00 00 00 00 00 00 00 | 47 1,524.4 | 1) In constant year in m 2004 2)The data in Butiness Profile column corners from field investigation. 3)Phinica quantity of energy consumption comes from the Feasibility Report, 4)Convenium factor is derived from farmula, that is Convenium factor is derived from farmula, that is Convenium factor affactor is derived from farmula, that is Convenium factor affactor is derived from factor constant from a constant data affar renovation. 7)Energy consumption of unit preduct const from the actual deterministion. |
| 4 | Boling Liucan Brian, Bajio Duarici, Xi' an | This plant was natabilished as a collectively oward plant in 1986 It occupies an area of over 107 run (1saw 1/15 bedarce). Froit of the project, the plant has fixed assume of 1 2 million bricks fixed assume of 1 2 million RMB Yuan and produces as annual output of 21.48 million bricks (common brick equivalent). While it has fixed assets of 1.74 million RMB Yuan and produces an annual output of 24 million bricks (common brick, equivalent) after removation. At pretend, the plant complex, 87 people including 6 totalated people and the milary i 800 RMB Yuan/month on average. The main raw material city and coat. The two main products are fired performed brit (module 240 - 115-901) and fire findows brick (south 240 - 240 1135). The price of the performan- rate in over 337%. As a result of removation, the performan- ment in yow 337%. As a result of removation, brick quality improved and the ecorgenance are increases from 83% to 33% Mo | Process yroduction and equipments: Boxing feeder+ rolls-double sha mixer→two-stage vacuum extruder ~column outler- rotourn outler- rotourn outler- rational size machine→natura drying→fileing in annular kiln The roatin energ is consumption l)The robit 38 chambers annula. vin 2 Boxing fore rolls \$Jlowing fine rolls \$Jlowing mextruder 7)Colur extruder 7)Colur extruder 7)Colur tutter 8 brick cutter soluter | Internal combustive cosl (t) Extérnál R combustive cosl (t) Porer/INTA | 9022.50 | 0.1 | 4 1263. 15 9 1308. 26 3 152.20 | Coal: 1.20 tre/10,000 bee Power: 0.071 tre/10,000 bee Coal: 1.20 tre/10,000 bee Coal: 1.20 tre/10,000 bee Coal: 1.20 tre/10,000 bee 1.27 tre/10,000 bee | 2148 10,000 2148 bee's./ | 2723.61 | 2.499 | 6189.9 | 1)Renewing process equipment Replace the whord colls crusher with Type 6 800 - 4600 hierards fine robus to timinase the fine nodules in the clay and to control the raw material finences. Replace the Type 330 settrader with Type 12K45340 two- tage vacuum, extrader to ativit the clay and the interior field even. Replace the column cases with vertical column by 10% Introduce the loss of column by increasing height of hack to reduce the loss of grees brick when chips weather or heavy rain. I us of Type ZE5-8 energy convention blower was introduced. | 53.9601 | 12,000.00 | Commercial Ioan Entrustment Lean Self- Punding Financial Assistance | 44.03610 re pr c u t | The novation oject had been ompleted coording 2005. to the cennicat plan. | Paybac period IRR NPV 03.10 | k 3.05 38.52 60.85 130.67 | year % ¥10,000 | 10,000 2400 common bricks/a | Coal: Power: Coal: Coal: Power: Coal: Power: Coal: Power: Power: | 0.95 tcc/10.0 bcc 0.063 tcc/10.0 bcc 1.01 tcc/10.0 bcc | | 47 1,524.4 | (1) In Constant year in m 2004 2)The data in Business Profile column cornes from field investigation 3)Phinical quantity of energy consurgation comes from the Feasibility Report. 4)Cenversion formula, that is Conversion factor formula, that is Conversion factor formula, that is Conversion factor for the Feasibility (Conversion factor for a statistic value of coal equivalent 3)Total investmant and GEF ocenes from the 0 recovated actual data (5)Physhesk Pariod, RE) and NPV is calibrated on the basic data after recovated actual data and NPV is calibrated on the basic data after recovation of unit product comes from the actual deterministion. |
| 4 | Baling Liucan Brick Başino Duerick, Xu' an | This plant was notablished as a collectively oward plant in 1986 It occupies an area of over 107 row (1ame 1/3 bodarcs). Prior to the period assets of 1.2 million RMB Yuan and produces as annual output of 21.48 million bricks (common brick equivalent). While it has fixed assets of 1.74 million RMI Yuan and produces as annual output of 24 million bricks (common brick, equivalent) after renovation. At protein studing, 6 to the set of the period couptut of 14 million bricks (common brick, equivalent) after renovation. At protein studing, 6 to totaking people instuding, 6 totaking people and the nalary is BO RMB Yuan/moth on average. The main faw material clay and coal. The two main produces are find performation the info (module 240 + 115-90) and firm hollow brick (module 240 + 240 + 240 + 133). The prior of the performation renovation, brick quality improved and the acceptance ra increases from 33% to 33% ho 37% how of the products are old on the level market in XAn. | Process yroduction and equipments: Doxing foeder=+ rolls=-double sha mixer=-two-stage yrodumn outler=- rollsmn outler=- rollsmn outler=- adybe transporting machine=-natura drying=-ficing in annular kiln The main eaerg is consumption 1)The roboit 38 kin 29Boxing feeder 3)Cinder fine rolls 5)Doub shaft mixer 6)Tw stage vacuum cytuter 8)Green brick cutter d)Blower | Linternal combustive coal (2) External fr combustive coal (4) Porer/WTA | 9022.50 | 0.1 | 4 1263. 15 9 1308. 26 3 152.21 | Coal: 1.20 tre/10,000 bee Power: 0.071 tre/10,000 bee Constant constant plice | 2148 10,000 bicin/ | 2723.61 | 2,483 | 6 789.9 | 1)Renewing process equipment Replace the whord rolls crusher with Tope 4 800 460 hisped fine rolls to eliminase the fine nodules in the clay and to control the raw material finences. Replace the 700 800 and the starting factor of the clay and the interior fact or mix the clay of the interody of the order of loader to reduce labor and increase production filticiency." 3)Annular klin renovation klin roof was removed, rebuilt and method 1 as of temperature tater was added to annular kin chower was introduced [] but of Type ZE3.5 energy conversation blower was introduced [] 3)Annuals for compression was added to cambler. | 53.9601 | 12,000.00 | Comercial Ioan Entrustment Loan Self- Punding Financial Assistance | 44.03610 re p r | The severation cject had been 2005. conding 2005. to the connicat plan. | Paybac geriod IRR NPV 203.10 798.31 Cost 4 cost 9 savin | k 3.05 38.52 60.88 | year % ¥10,000 ¥1/tee | 10,000 2400 commo bricks/a | Coal: Power: Power: | 0.95 tcc/10.0 bcc 0.063 tcc/10.0 bcc 1.01 tcc/10.0 | | 47 15244 | (1) In constant year in m 2004 2)The data in Butiness Profile column corners from field investigation. 3)Phinica quartity of energy consumption comes from the Feasibility Report, 4/Conversion factor is derived from factor is derived from of faet/Calorific value of faet/Calorific value of coal applications from the conversion factor recovation actual data ()Payback period, IEI and NPV is calibrated on the basic data after recovation. 7/Energy communities of unit preduct comes from the actual deterministion. |
| 4 | Boling Liucan Brian, Bajao Duaria, Xu' an | This plant was established as a collectively oward plant in 1986 It occupies an area of over 107 row (1xm+17) bedrace). Froit to the project, the plant has fixed assumes of 1 a million blacks. Common trick equivalent). While it has fixed assets of 1.74 million RMI Yuan and produces an annual output of 24 million bricks (common brick equivalent) after renovation. At pretend, the plant evolution of 24 million bricks (common brick equivalent) after renovation. At pretend, the plant evolution 24 million bricks (common brick equivalent) after renovation. At pretend, the plant evolution 24 million bricks (common brick equivalent) after info RMB Yuawhouth on average. The main raw material (candule 240+115-90) and first findolew brick (module 240+230, 115.04 RMB Yuawhoten and the performance of the performan- rate is over 37%. As a result of renovation, brick quality improved and the acceptance ra- increases from 33% to 33% to 33% to 33% to 33% to 53% MB | Process production and equipments: production and equipments: possing feeder | Internal combustive coal (2) Extérnál R combustive coal (2) Porer/INTh Porer/INTh Sum total R Co | 9022.50 4511.25 397.38 | 0.1 | 4 1263. 15 9 1308. 26 3 152.21 | Coal: 1.20 tre/10,000 bee Power: 0.071 tre/10,000 bee Coal: 1.20 tre/10,000 bee Coal: 1.27 tre/10,000 coast 1.27 tre/10,000 bee | 2148 10,000 bioin | 2723.61 | 2.433 | 6 189.9 | I kenewing process equipment Replace the whord colls crusher with Pype 6 800 + 400 hierards fine robts to climituse the fine nodes in the clay and to control the raw material finences. Replace the Type 350 extruder with Type IZK4540 two hage vaccum, extrader to arise the clay and the interview fuel event. Replace the column outer with vertical column by 10% interdio: I at of loader to reduce labor and increase production efficiency. 2) Annular kin renovation Kin nord wasternoved, roboitt and sadded to anguither kin. Drainage system of graon brick yand was repaired by increasing helpt of hack to roboet the sadde to anguither kin. Drainage system of graon brick yand was repaired by increasing helpt of hack to roboet the sadde to angue added to kin blower. And non-power compensator was added to anguler. | 53.9601 | 12,000.00 | Commercial Ioan Entrustwent Loan Self- | 44.03610 ré pr c t | The novation oject had been 2005. ompleted - ccoording 2005. to the cohnicat plan. | Paybac period IRR NPV 03.10 78.31 Cost 4 energ savin | k 3.05 38.52 60.85 130.67 | year % ¥10,000 | 10,000 2400 common bricks/a | Coal: Power: Power: Consumption | 0.95 tcc/10.0 bcc 0.063 tcc/10.0 bcc 1.01 tcc/10.0 bcc | | 47 | 1) In Construct year in n 2004 2)The data in Business Profile column corress from field investigation. 3)Phinica quantity of energy consumption comes from the Feasibility Raport. 4)Conversion factor is derived from formula, that is Conversion factor =Factual calorific value of fact/ Calorific value of fact/ Calorific value of fact/ Calorific value of a calorific value reported actual data (of hybraic for the reported actual data after reported a factor preduct conset from the actual determination. |
| 4 | Beling Liucan Bride Dagiao Dueriei, Xu' an | This plant was natabilished as a collectively oward plant in 1986 It occupies an area of over 107 row (1xm+1/3 bodarcs). Friet to the project, the plant has fixed assets of 1.2 million RMB Yuan and produce as annual output of 1.48 million bricks (common brick equivalent). While it has fixed assets of 1.74 million RMI Yuan and produce as annual output of 24 million bricks. (common brick equivalent) after renovation. At present, the plant exceptors a fixed people and the million brick optimized people and the million exceptors at propile including. 6 tochaical people and the million werage. The main raw material chay and coal. The two main sproduces are (fixed performated by (module 240 +115-90) and firm follows brick (and performated by include 240 +115-90) and firm follows hick (and performated by the bodies with the beorgenzers er increases from 37% As a reath for an enough, brick guality improved and the acceptance er increases from \$3% 10.93% Mo of the products are old on the local material to Name in the Name increases from \$3% 10.93% Mo of the products are old on the local material million the local material to Name | Process production and equipments: Boxing fooder | d Sum total | 9022.50 | 0.1 | 4 1263. 15 9 1308. 26 3 152.20 | Coal: 1.20 tre/10,000 bee Power: 0.071 tre/10,000 bee Coal: 1.20 tre/10,000 bee Coal: 1.20 tre/10,000 bee 1.27 tre/10,000 bee plice | 2148 10,000 bicin/ | 2723.61 | 2.433 | 6 6 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 | I Renewing process equipment Replace the whord rolls crusher with Prope & 800 vielo 800 kineset fine rolls to climinuse the fine nodules in the clay and to control the raw material fineness. Replace the Yps 300 estructor with Yps 12X45340 two- tage vacuum estructer to active the clay and the interior field even. Replace the column outer with vertical column by 10%. Introduce the loss of column by 10% Introduce 1 et of loader to reduce labor and increase production efficiency. \$ 2)Ammular kijn resources this roof was removed, roboth and kein roof was removed, roboth and seded 1 act of temperature teater Was added to ensular kiln. Drainage system of green brick when cashy wetther to heavy rain 1 act of Type ZE3-8 energy conversion blower was introduced. D)Antroducing electric equipments Transducer wins added to kiln blower. And non-prove compensator was added to entroder. | 53.9601 | 12,000.00 | Commercial Ioan Entrustment Loan Self- Punding Financial Assistance | 44.03610 rr p r t | The severation oject had been 2005. coording to the echnical plan. | Paybac geriod IRR NPV 28.31 Cost 4 cost 4 savin | k 3.05 38.52 60.88 | year % ¥10,000 | 10,000 2400 commo bricks/a | Power: Power: Consumption | 0.95 tcc/10.0 0.063 tcc/10.0 bcc 1.01 tcc/10.0 bcc | | 47 1,524 | () In constant year in m 2004 2)The data in Butiness Profile column corners from field investigation. 3)Phinica quartity of energy consumption comes from the Feasibility Report. 4/Conversion factor is derived from factor is derived from of fuel/ 2016 from factor of fuel/ 2016 from factor of fuel/ 2016 from factor and free/ 2016 for the of could be build data after renovation. 7/Energy communication of unit product comes from the actual deterministion. |
| 4 | Boling Livean Brits, Bajioo Duerici, Xu' an | This plant was entablished as a collectively oward plant in 1986 It occupies an area of over 107 row (1xm+1/2) bodarcs). Prior to the project, the plant has fixed assume of 1.2 million blacks. Some and produces an annual output of 21.48 million bricks (common brick equivalent). While it has fixed assets of 1.74 million RMI Yuan and produces an annual output of 24 million bricks (common brick equivalent) after renovation. At pretent, the plant exploys 87 porple involuting 6 tochical propole and the material city and can be the two main products are fixed performation in bolies brick (module 240 v240 113). The price of the performation rate is over 37%. As a result of renovation, the way 57%. As a result of renovation the acorgitance ra- increases from \$3% to 93% ho of the products are fixed in local market in X0 an. | Process production and equipments: Boxing feeder | Internal combative coal (s) Extérnál R combative coal (s) Porér/MTh Sum total R Co | 9022.50 | 0.1 | 4 1263. 15 9 1308. 26 3 152.27 2723.6 | Coal: 1.20 tre/10,000 bee Power: 0.071 tre/10,000 bee Coal: 1.27 tre/10,000 bee Coal: 1.27 tre/10,000 Coal: 1.27 tre/10,000 bee plica | 2148 10,000 bicka/ | 2723.61 | 2.493 | 6 189.9 | I kenewing process equipment Replace the whord rolls crusher with Pype 6 800 + 400 hierards fine rolls to eliminase the fine nodes in the clay and to control the raw material finences. Replace the Type 350 estructor with Type IZK45/40 two- tage vacuum estructed to only the clay and the interview fuel event. Replace the column outer, with vertical column by 10% interdisc the loss of column by interesting height of back to reduce the loss of green brick when easing weather of green brick when easing weather of the storik when easing weather of neary coardination blower was and col to earthder. | 53.9601 | 12,000.00 | Commercial Ioan Entrustwent Loan Self- Punding Financial Assistance | 44.03610 re pr cr t | The novation yeach had been 2005. ompleted - coording 2005. to the columinat plan. | Paybac period IRR NPV 03.10 78.31 Cost of savin | k 3.05 38.52 60.85 | year % ¥10,000 | 10,000 2400 common bricks/s | Coal: Power: Consumption | 0.95 tcc/10.0 bcc 0.063 tcc/10.0 bcc 1.01 tcc/10.0 bče | | 47 15244 | () If a constance year is in 2004 2)The data in Burinean Profile column corress from field investigation. 3)Phinicar quantity of energy consumption comes from the Feasibility Report. 4)Cenversion factor is derived from formula, that is Conversion factor -Factual calorific value of coal countries from the or coal count of the recovated actual data. 6)Physheet proid, R2I and NPV is calibrated on the basic data after renovation. 7)Energy consumption of unit hertual determination. |

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| 5 B B P | Aolin miao Brick Tant | This plant was established as a collectively owned plant in 1974. It occupies an area of over 100 mu (Imm=1/13 hoctare). Prior to the project, the plant has fixed sensition (1.07 million RMB Yuar and produces an annual output of 20 million bricks (common brick equivalent). While it has fixed meets of 1.39 million RMB Yuar and produces an annual output of 30 million bricks (common brick equivalent). Brief removation. All presents, the plant employs 105 people and the salary is 860 RMI Yuan/month on average. The road read brick (module 240×113×90) and fired hollow brick (module 240×240×113). The prior of the perforation is 0.35 RMB Yuan/picce and the perforation infer one first is nover 26 %. The priors of the hollow is 0.95 RMB Yuan/picce and the acceptance pare increases from 80% to 90%. Most of the products are sold on the local market in Xian. | Production process and equipmenta: Cinde couldner + boxing feeder | Internal combustive coal (c) External combustive coal (c) Power/AWA Sum total | 5100.00 | 0.19 | 999.6 1,407.9 122.5 | C Coal: C Power: G C C C C C C C C C C C C C | 1_20 tce/10,000 bce 0.06 tce/10,000 bce | 2,000 10,000 bce/a/ | 2,530.06 | 2493 | 6,307,44 | 1) Annular kiln reportion a) Constructing a new 24 chambers annular kin. b) The original 24 chambers annular kiln was sealed. The surface backfulling was carried away and the lacking flux and arch repaining. 2) Process outprents renovation Develop installation and commissioning for the equipments including stone-eliminating rolls, double shaft mixer, hi-speed fine rolls, vacuum extruder, column cutter and green brick cutter. 3) Electric equipments readvation Introduce transducer to energy conversation blower and non- power compensator controlling system to extruder. 4 Staff training | 853175 | 12,000.00 | Commercial Ioaa Entrustaent Loon Self- Fynding | 75 39350 | The renovation project had been completed according to the technical plan. | 2005.03.10 | Payback period IRR NPV Cost of energy saving | 2.47 48.36 136.09 210.5 | year % ¥10,000 ¥1/tce | a a |
|---------------|--------------------------------------|---|--|--|---------|-------|--|---|--|-------------------------|----------|-------|----------|--|---------|-----------|--|----------|--|--------------------------|--|----------------------------------|--------------------------------|--------|
| 6 Ma • • • | inling uitding leterial Co. | This plant was established as a 1980. Osliectively owned plant in 1980. It occupies an area of over 96 mm (1mm=1/15 hectare). Prior to the produces an annual output of 20 million bricks (common brick, equivalent). While it has fixed amets of 1.37 million RMB Yuan and produces an annual output of 30 million bricks (common brick, equivalent). After removation, As present, the plant employs 95 people including. 7 technical people and the salary in 930 RME Yuan/meeth on average. The main raw material is clay and coal. The two main grodusts are fixed performed brick (module 240-115-90) and fired hollow brick (module 240-240-115). The price of the hollow is 1.00 RMB Yuan/piece and the perforation rate is over 20%. The price of the hollow is 1.00 RMB Yuan/piece and the performation fired, quality improved and the acceptance rate increases from 77% to 67% Meet of the products are sold on the local market is Nfan. | Procuction Process and equipments: Cinder crusher +- boxing fooder hispeed fue rolls mixer vocuum extruder vertical column euter groen brick cutter natural drying annular toin The main energy consumption equipments: 1)New 24 chambers annular kin and the repaired 28 chambers annular kin 2.Cinder erusher 3)Hi-speed rolls 4)Mixer 5)Vacuum extruder 6)Vertical column eatter 7)Green brick cutter 8)Exhausted blower | Internal combustive coal (t) External combustive coal (t) Power/AWh | 6500.00 | 0.196 | 1,274.0 1,230.0 137.8 2,641.8 | Coal: Power: Power: C chergy consum ption | 1.25 tce/10,000 0.07 tce/10,000 bce 1.32 tce/10,000 | 2,000 10,000 boc/s./ | 2,641.88 | 2.493 | 6,586.21 | 1)Annular kiln renovation (a)A new 24 chembers annular kiln was constructed. (b)The original 28 chambers annular kiln was sealed. The surface backfilling was carried away and the leaking flue and arch roof was refilled and tamped after repairing. (b)Process equipments renovation a)A new excavator was introduced. The equipments including einder erusher, hi-speed fine rolls and vertical columa cutter were installed and debugged. (b)Die installation and commissioning (commissioning) (commissionin | 49.9706 | 12,000.00 | Connercial Ioan Entrustment Loan Seif- Funding Financial Assistance | 40.04660 | The renovation project had been completed according to the technical plan. | 2005.03.10 2005.08.31 | Payback period IRR NPY Cost of energy saving | f.37 84.01 167.65 | year % ¥ 10,000 | 3,000 |

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| She Wal a H SSs | This colladiant colladiant lite colladiant and lite is and and lite is equipation is peoperation in the peoperation is peoperation in the peoperation is peoperation in the peoperation is peoperation in the peoperation is peoperation in the peoperation is peoperation in the peoperation is peoperation in the peoperation is peoperation in the peoperation is peoperation in the peop | plant was established as a actively owned plant in 2000, scopies an area of over 120 (1mu=1/15 hetare). Prior to project, the plant has fixed ts of 1.25 million RMB Yuan produces an amutal output of million bricka (common brick ivalent). While in has fixed ts of 1.78 million RMB Yuan produces an annual output of million bricka (common brick ivalent). While in has fixed ts of 1.78 million RMB Yuan produces an annual output of million bricka (common brick ivalent) after renovation. At sets, the plant mploys 100 ple including 7 technical ple and the salary in R70 RMB as month on average. The in raw material is foly and 1. The two main products are d perforsate brick (module 240-115) e price of the performate brick (Mdule 240-240-115) e price of the performate brick (B Yuan piece and the formation rate is over 25%. As a result of covation, brick quality proved and the acceptance rate reases from 83% to 93%. Most he products are sold on the al market in N7an. | Production process and equipments: Boxing feeder rolls double shaft mixer two-stage vacuum extuder column cutter adobe transporting machine nature dobe transporting machine nature dobe transporting machine | Internal combustive combustive combustive root (t) Power/WWh Sum total | 518.00 | 0.29 | 3192.00 | Coel: 1.14 tce/10,000 Power: 0.071 tce/10,000 bce | 2800 10,000 bee/s/ | 3390 39 | 2.493 | 8452 25 | The raw material is cleaved in downee and used in rest year. A high- speed fine rolly was aproduced to improve planticity and homogeneity of the clay so that the Plant can produce thin wall brock. A cinker cruther was introduced to improve the particle size of the cinker and cakeic value was tested periodically. 2)Shaping Xoa-power compension was introduced to reduce propower wate. The die and one were removated Column earlier was replaced with varical column suffic. 3) Drying Drainage system of green brick yard was removated Thick wall hollow brick was used for hick and in it hadgeted to use 56 tipurand brick to increase the hack keight. 4) Firing The original 24 charbers annular kiln was rebuilt. And the original 28 charbers annular kiln was renovated the finished product is classified so that the manager can evaluate the management institution of his enterprise. | 53 3274 | 12,000.00 | Commercial loan Entrustment Loan Self- Funding Financial Assistance | 43.40344 | The renovation project had been 21 completed according 21 to the technical plan. | 005 03.10 | ayback keriod (RR QPV Cost of eaergy saving | 1.60 72.51 [48.29 | year % ¥10,000 | 10,000 3500 common brjeka/a | Coal: Power: 0 Cenergy consum ption | 1.01 tce/10,0 bce | 691.8 | 1,724.6 | in 2004.2)The data in Business Profile columni comes from field investigation. 3)Philicel quantity of energy consumption cores: from the Peasibility Report. 4)Conversion factor is derived from formula, Itaa is Conversion factor = factual calorific value: of fuel/Calorific value: of fuel/Calorific value: 3)Total investment and GEF comes from the renovated actual data 5)PhySeck period. (RR and NPV is calibrated on the basic data after renovation.7)Energy consumption of unit product comes from the Feasibility Report. |
|--|--|--|--|--|------------------------------|------|--|---|-------------------------|----------|-------|----------|---|---------|-----------|--|----------|--|------------|--|-----------------------------------|--------------------------------|-----------------------------------|---|--|-------|------------|---|
| 556 557 519 519 510 510 510 510 510 510 510 510 510 510 | The second secon | is plant was established as a all privately, owned plant in \$1. It occupies an area of over 0 nu (trave 1/13 hoctare). or to the project, the plant has do and the project, the plant has do assets of 0.27 million RNE and and produces an annual tipot of 22 million bricks ammon brick, equivalent). Whith has fixed assets of 0.47 million (B Visan and produces an annual output of 30 million brick ammon brick, equivalent). Whith with the state of the state of the produce of the state of the state of the state of the state of the state of course of the performance of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the performance of the state of the the state of the state of the state of the the state of the state of the the state of the the state of the state of the the state of the the state of the state of the the state of the the state of the state of the the state of the the state of the state of the the state of the the state of the the state of the state of the the state of the the | Production process and equipments: Cisade rousher + boxing feeder | Internal combustive coal (t) External combustive coal (t) Power/Wih Power/Wih | 6000.00 2150.00 468.00 | 0.19 | 6 1,176.0 22 1,466.3 33 179.2 2,821.5 | Coel: 1.20 tce/10,00 bce fower: 0.08 tce/10,00 bce t c c c consue ption t consue t c consue t consue t c consue t c consue t c consue t consue t consue t consue t consue t consue t consue t consue t consue t consue t consue t consu consue t consue t consue t consue t consue t consue t consue t consue t consue t consu c consu t consu consu consu consu consu consu consu consu consu consu c consu consu consu consu c consu c consu consu consu c consu c consu c consu consu consu c consu c consu c consu c consu c consu consu c consu consu c consu c consu consu consu c consu consu consu consu consu consu consu consu consu consu consu cons consus c consus consus c cons cons consus c con | 2,200 10,000 bee/s./ | 2,821.54 | 2.493 | 7.034.11 | 1)Annular kilo renovation The original 38 chambers annular kiln was sealed. The surface hackfilling was carried away and the leaking flue and arch roof was refilled and tarped after repairing. 2)Process equipments renovation a)A new excavator was introduced And the equipments including cinder ensister, hi speed for rolls, vacuum extruder and vertical column cutter were installed and debugged. b)Die installation and commissioning 3)Electric equipments renovation Transducer controlling system was added to kiln blower. Non-power compensator controlling system was added to extruder and hi-spee- lipe rolls apiece. | 49.5838 | 12,000.00 | Commercial loon Entrustment Loan Self- Funding Financial Assistance | 39.9598/ | The renovation project had been completed according to the tochnical plan. | 2005.03.10 | Payback period JRR NPV Cost of energy saving | 1.54 75.25 145.55 118.02 | yenT % ¥10,000 ¥1/tce | 10,000 3,000 commo bncks/s | Coal: Porer: (Cenergy consum pliom | 1.020 tce/10, bce 0.056 tce/10, bce | 620.9 | 16 I.548.1 | 1)The baseline year is in 2004 2)The data in in Buciness Profile column corness from field investigation. 3)Philical quarity of energy consumption cornes from the Fassibility Report. 4)Conversion factor is derived from formula, that is Conversion factor - Factual calorific value of cash againstant. 3)Total investment and GEF cornes from the Institution and Commissioning Report. 6)Payback period. J.RR and NPV is calibrated on the basic data after renovation. 7)Energy consumption of oth product cornes from the actual determination. |

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| Sha ng N Bac Data Nin Nin | The function of the second sec | is plant was attablished as a all privately overed plant in (RL II occupies an area of over 0 mu (Inn=1/15 hestare), ior to the project, the plant hest ed aasts of 0.97 million RMB tan and produces an annual tput of 26 million bricks memo brick equivalent), White and fixed assets of 1.47 million brick equivalent, white and output of 27 million bricks memo brick equivalent) affect someton brick equivalent, bricks antion brick equivalent, affect someton brick equivalent, affect someton brick equivalent, affect someton brick equivalent, affect and output of 27 million bricks antion brick equivalent) affect and output of 27 million bricks antion brick equivalent, affect and output of 27 million bricks antion brick equivalent, and the someton anti- mage. The main of performat brick odule 240 × 115 × 90 and fired 108 brick (module 240 × 115 × 90) and fired 108 brick (module 240 × 115 × 90) and fired 108 brick (module 240 × 115 × 90) and fired 108 brick (module 240 × 115 × 90 and fired 108 brick (module 24 | Production process and equipments: Cinder crusher+- boxing (eeder hi-speed fine rolls mixing extruder green brick cutternatural dyingfiring in annular kiln The main energy consumption equipments (1)The repaired 38 chambers annular kiln 2)Cinder crusher 3)Hispeed fine rolls 4)Mixing extruder 6)Column cutter 7)Green brick cutter 8)Blower | Internal combustive coal (t) External combustive coal (t) Poter/NTh Sam total | 5900.00 2500.00 469.00 | 0.196 | 1,156.40 1,705.00 179.24 3,040.64 | Coal: 1 Power: 0 energy 1 ption | 1.10 tce/10,000 bce | 2.600 10,000 bcc/a/ | 3.040.64 | 2.493 | 7,380.33 | 1)Annular kiln renor The original 38 chain kin was seekd. The backfulling was carrie the leaking flue and a 2)Process equipments a The equipments indi- crusher, hi-speed fine extruder, vacuum ext- vertical column cutie installed and debugge b)De installation and commissioning 3)Electrix equipment Transducer controllin added to kiln blower. compension controllin inter rolls apiece. 4)Staff training. | stion hers annular surface d away and relt roof was a renovation wding einder rolls, mixing rolls, mixing ruder and r were d. s renovation g system was Non-power ing system r and hi-speed | 50.9854 | 12,000.00 | Commercial loan Entrustment Loan Self- Funding | 41.06140 | The renovation project had been completed according to the technical plan. | 2005.03.10 2005.08.31 | Payback period 1kR NPV Cost of energy saving | 3.17 38.22 56.82 | yest % ¥10,000 ¥1/tce | (2,700 cbr tri tri | 0,000 manon iclesta P | nergf 0.95 tcc/10,000 bce nergf 0.95 tcc/10,000 bce | 604 65 | 1,507.39 | 1) The baseline year is in 2004 27 The data in Ruinness Profile column comes from field invertigation. 3) Phinical quastity of energy consumption comes from the Feesibility Report 4/Conversion factor is derived from factor is derived from formula, that is Conversion factor - Factual ecological of field Calorific value of field Calorific value of coal equivalent and RVD in calibrated on the basic data after renevation. 7) Energy consumption of unit product comes from the actual determination. |
|--|--|---|---|--|------------------------------|-------|--|---|---|------------------------|----------|-------|----------|---|--|---------|-----------|---|----------|--|--------------------------|--|-------------------------|--------------------------------|------------------------------|--|--|--------|----------|---|
| Shiji So o 10 Hati Bin Pier | The international sector of the sector of th | is plant was established as a all privately owned plant in S0s. It occupies as area of over mn (1ou-115 hoctare). Priva- tion of the project, the plant has fixed ests of 1.25 million RMB Yuan d produces an around output of "million bricks (common brick uivalent). Philis in has fixed ests of 1.76 million RMB Yuan d produces an around output of "million bricks (common brick uivalent) after renovation. At sent, the plant employs 103 estimation bricks (common brick uivalent) after renovation. At sent, the plant employs 103 epite ind the statistical optie and the statistical opties of the holdow 240-240-215), the price of the performation 0.40 (BY Yuan Jioos to 2028, Mon est over 37%. As a resh of ovation, brick quality growed and the acceptance rate greeness from 300% to 2028. Mon the produces are add on the sel market in Nitan. | Production process and equipments: Boxing feeders — his speed fine rolls: — Double shall mixing extruder — two- stage vacuum extruder — woolumn cutter-prene brick cutter — adobe transporting machize — matural drying — — firing in ansular kin The main energy consumption equipments 1)The robuils 38 chambers annular kiln 2)Boxing feeder 3)Cinder crusher 4)Hispeed fine rolls 5)Double shall mixing extunder 6)Two-stage vacuum extruder 7)Column extruder 9)Blower | laternal combustive coal (c) External combustive coal (t) Power/WTh Sum total | 9240.00 | 0.29 | 2639.87 9 143.24 2783.11 | Coal: 1 Power: 0.0 C energy 1 consum 1 ption | 1.20 tce/10,000 bce 065 tce/10,000 bce | 2200 10,000 boe'a./ | 2783.11 | 2.493 | 6938.25 | 1) Raw material i returne The raw material is exo advance and used in risk weatherias i. The origin and mixer were coplaced fiber rolls and mixing ed- entabler was introduced, was tested periodically. Proposition is determined eakoric value. 2)Shaping Non-power compensator introduced to reduce ping introduced to reduce ping perforation restangular perforation restangular perforation restangular perforation restangular bind editing down outler w 3)Doying The de and scientify in was removated. Will unclosing and skimting dying rate and rate of d can be improved. (4)Firning 1)Finished product is class | of vated in year to al rolls crusher by hi-speed mader. A cinder Calorie value The mixing according to was power waste. designed to se high- bricks. The as replaced. the green brick h covering, the adobe, the rying adobe chambers ting pattern ting pattern ting battern ting | 51.27 | 12.000.00 | Comercial loan Entrustment Loas Self- Funding | 41 35000 | The renevation project had been completed according to the technical plan. | 2005.03.10 2005.08.31 | Peyback period IRR NPV Cost of energy saving | L.70 68.68 119.86 | year *6 ¥10,000 | 2600 sh | 0,000 amon eks*a. c e e | sergy 1.03 tce/10,000 bce sergy 1.03 tce/10,000 bce | 604.76 | 1,507,67 | 1)The baseline year is in 2004 2)The data in Basiness Profile column comes from field investigation. 1)Phinical quantity of energy observations from the Festibility Report. 4)Conversion factor is derived from formula, that is Conversion factor =Factual calorific value of coal equivalent. The Plant uses the poor coal with low calorific value of coal equivalent. The Plant uses the poor coal with low calorific value of coal equivalent. The Plant uses the poor coal with low calorific value of coal equivalent. The renovated actual data .6)Payback period, IRR and NPV is calibrated on the basic data after renovation. 7)Energy consumption of unit product comes from actual deter mination. |

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| 1 | Xian Oresta Bock Plant | This plant was established as a small privately owned plant in 1980s. In occupies an area of over 140 time (Innun')/15 heetare). Prior to the project, the plant has fixed anset of 1.12 million RMB Yuan and produces an annual output of 24 million brecks (common brick equivalent). Whil it has fixed assets of 1.62 million RMB Yuan and produces an annual output of 40 million brick equivalent) and produces an annual output of 40 million brick equivalent) after the plant employer 115 people including 111 removation. Al present, the plant employer 115 people including 111 average. The main raw material is (londule 240 - 115: 90) and fired holions brick (module 240 - 240- 315). The prise of the perforated broke of the holiow is 0.56 RMB Yuan piece and the perforation rate is over 42%. As a result of increases from 78% to 88% Mios of the products are solid on the local market in N2m. | Production process and equipments: Cinder cruster + boxing fender coarse rolls hi speed fine rolls - mixing extruder mixing extruder mixing extruder natural drying firing in anudar kiln The main energy consumption equipments 1)The repaired 38 chambers annular kiln 2)Cinder erusher 3)Rolls 4)Mixer 5)Vaccum extruder 6)Column brick cutter 8)Exhausted blower | Internal combustive con] (t) External combustive coal (t) Power/ATh Sum total | 6500.00 2720.00 473.10 | 0.196 | 1,274.00 1,719.04 181.20 3,174.24 | Coul: 1 Power: 0 consum 1 ption | 20 tce/10,000 bce .07 tce/10,000 bce .27 tce/10,000 bce | 2.490 10,000 bce/a./ | 3,174.24 | 2.493 | 7,9(3.37 | 1)Armelar kin r a)A new 24 chas consense. consense. al on the autoentic of a The autoe back away und the lar ranovate of a 30. The autoe back away und the lar al A new excave And the equipme- column cutter w and debugged. b)Die installatio 33E lectric equip column cutter w and debugged. b)Die installatio 33E lectric equip added to extrude apiece. 4)Drainage systi was renovated. 5)Staff training. | moration mbers annular kitn was b)The bers annular kitn was hambers approved and kitng flue and arch and tanged after lasts annovation in tanged after lasts renovation is was introduced, nas including cinder was and commissioning ments renovated, installed and commissioning ments renovation incling system was and blower. Non-power fooling system was and blower. Non-power fooling system was and of green brick yard | 50.4222 | 12.006 ox | Commercial loan Entrustment Loan Self- Funding Financial Assistance | 40,49820 | The tenovation project had been completed according to the technical plan. | 2005.03.10 | Payback period IRR NPV Cost of energy saving | 0.86 129.92 285.54 103.70 | year % ¥ 10,000 ¥ 1/tce | 10,000 4,000 common bricks'a | Coel: 1.03 Power: 0.03 Coerry I. ption | 50 tce/10,000 bce 51 tce/10,000 bce | 696.95 | 1,737 50 | 1)The baseline year in in 2014. 2) The data in Batiness Profile column comes from field investigation. 3)Phisical quantity of energy consumption comes from the Feasibility Report. 4(Conversion factor is derived from formula, that is Conversion factor * Factural colorific value of fuely Calorific value of fuely Calorific value of fuely Calorific value of oust equivalent. 5)Total investment and GEF comes from the basic data after product comes from a-stual determination. |
|---|---------------------------------|--|---|---|------------------------------|-------|--|---|--|---------------------------------|----------|-------|----------|---|---|---------|------------|--|----------|--|--------------------------|--|------------------------------------|----------------------------------|------------------------------------|--|--|--------|----------|--|
| | Chang n Xuba Plaze | This plant was established as a mult privately owned plant in 2000. It occupies an area of over 100 mou (time 115 hoctare). Prior to the project, the plant has fived assets of 1.10 million RNB Vuan and produces an anneal output of 24 million bricks (common brick equivalent). Whi it has fixed assets of 1.71 million RNB Vian and produces an anneal output of 30 million RNB Vian and produce an anneal output of 30 million theid (common brick equivalent) after ranovation. At present, the plant assets output of 30 million theid (common brick equivalent) after ranovation. At present, the plant employs 120 people including 7 technical people and the salary in the site of the salary in the plant over the product are field performand in 3.08 RNB Vianspiece and the performance is over 40%. As a result of renovation, brick quality improved and the acceptance ratingreases from 78% to 92%. Mo of the preducts are sold on the local market in XTan. | Production process and equipments: Circler otuber + boxing feeder course rolls hi- speed fine rolls twong strength mixer vacuum le extruder vertical column culture-green brick cutter aatural drying firing in avendar kiln The main energy consumption equipments 1)The robuin 24 chamber annular kiln and the repaired 38 chamber annular kiln ayCinde crusher 3)Tis epoed olis 4)Storng strength mixer 5)Vacuum extruder 5)Vacuum extruder 6)Vertical column cutter 7/Screen brick. cutter 8)Exhausted blower | Internal combustive <u>conl (1)</u> External combustive <u>conl (1)</u> Power/WTh | 7000.00 | 0.197 | 1,379.00 1,384.60 165.40 2,929.06 | Coal: Power: C Power: C energy consum ption | 1.15 tce/10,000 bce 1.07 tce/10,000 bce | 2,400 ^{10,000} boe'a./ | 2,929.06 | 2.493 | 7,302.14 | 1) Annular kin a) The 24 char was construct b) The original annular kin w surface backfi away and the roof was refill repaining. 2) Process equ a) A new exca And the equip einder erushet rolls, strong sti vertisal coluri renovated, ins b) Die installat commissionin 3) Electric equ Transducer ce added to kin 1 compensator was addod to kin fine rolls and apiece. Non-r was addred to 3) Staff trainin 5) Staff trainin | tenovation bers annutar kiln 22 chambers sealed. The ung was carried sking flue and arch dand tamped after prents renovation from two introduced ments including high-speed fine ength mixer and notifer were alled and debugged for and some non-power ontrolling system circular, hi-speed some Non-power ontrolling system circular, hi-speed more some system circular, hi-speed more some system circular, hi-speed some strong strength mixe more some strength mixe more some brick tated. | 67.090 | 4 12,000.0 | Commercial loan Entrustment Loan Self- Funding | 57.16640 | The renovation project had been completed according to the technical plan. | 2005.03.30 2005.08.31 | Payback period IRR NPV Cost of energy saving | 2.46 49.67 108.01 | year *4 ¥10,000 ¥1/tce | 10,000 3,009 commor bricks/a | Coal: 0.9 Power; 0.0 energy 0. consta 0. ption | 95 tce/10,000 bce 95 tce/10,000 bce 95 tce/10,000 bce | 800.46 | 1,995.52 | 1)The baseline year is in 2004.2)The data in Businest Profile column comes from field investigation. 3)Philicit quantity of energy consumption comes from the Feasibility Resport 4/Conversion factor is derived from formula, that is Conversion factor =Factual catorifle value of cast equivalent. 3)Total investment and GEF comes from the Institution and Companisoning Report 6)Payback period, JRR and NPV is esibleated on the basic data after removation. ?/Energy conjungtion of umb |

| Sau See Bail 13 Ma So Xiu | In m m m i y i i i fixe y i fixe y i fixe y i fixe y i fixe y i fixe y i fixe y i i i i i i i i i i i i i i i i i i | Is plan was established as a all privately owned plans in 29. It occupies an area of over 59. It occupies an area of over 59. It occupies an area of eases of 300 million RMB an and produces an areas up of 23 million bricks weren brick equivalent and the same plant of 25 million bricks weren brick equivalent after sociation. A present, the plant plant of 26 million bricks weren brick equivalent after plant of 26 million bricks weren brick equivalent after sociation. A present, the plant plant of 26 million bricks operate including 11 finical people and the salary is o BAB Vauarmonth on crage The main raw material is y and coal. The two main ducts are fred performed brick adult 240 + 115 + 90) and fined low brick (module 240 + 240 - 5). The price of the perforated of RMB Vauarmonth on crage The main raw material is y and coal. The two main ducts are fred performed brick adult 240 + 115 + 90) and fined low brick (module 240 + 240 - 5). The price of the perforated of RMB Vauarmonth enter for an any fred match and provide a start fred performance rate reases from 83% to 93%. Most the products are sold on the all market in NPan. | Production process and equipments: Cinder ensher + boxing feeder coarse rolls hi speed fine rolls -double shaft mixer vacuum extruder vertical column eutter-green brick cutter natural drying fring i annular kin The main energy constamption equipments 1)New 28 chambers annular kin 2)Cinder erusher 3)Hi-speer rolls 4)Double shaft mixer 5)Vacuum extruder 6)Vertical column eutter 7/Green brick cutter 8)Exhausted blower | Laternal combustive co | 6500.00 2360.00 425.50 | 0.19 | 2,928.49 | Cosl: 1.20 tee, bee Power: 0.07 tee bee Cenergy 1.27 tee, consum 1.27 tee, bee | 10,000 | 10,000 bee'a./ | 928 49 | 2.493 | 7,300.72 | 1) Annular kin reportion The new 26 chambers annular kin was constructed. 2) Process equipments renovation a) A new executor was introduced And the equipments including inder crusher, high-speed fine indis and vertical column cutter were renovated, installed and debugged. b) Die installation and commissioning 3) Electric equipments renovation Transducer controlling system was added to exhausted blower. Non- power compensator controlling system was added jo exhuder 4) Drainage system of green brick yard was renovated. 5) Staff training. | 50.8911 | 12,000 00 | Commercial losn Entrustment Losn Self- Funding Financial Assistance | 40.96710 | The renovation project had been completed according to the rechnical plan. | 2005.03.10 2005.08.31 | Payback period IRR NPV Cost of energy saving | 2.6 46.12 75.70 | year *; ¥ 10, 000 ¥ 1/tce | 2,600 goni brick | Coul: Power: 000 non s'a. C energy consum ptice | 0.970 tce/10,000 bce 0.062 tce/10,000 bce 1.03 tce/10,000 bce | 628.15 | 1,565.97 | (1) for observing year is in 2004. 2) The data in Business Profile column (in 2004. 2) The data in Business Profile column (in 2004. 2) The data in quantity of energy cortexnption comes from the Feasibility Report. 4 (Conversion factor is derived from formula, that is Conversion factor =Factual calorific value of coal equivalent. SyTotal investment and GEF coress from the Insalition and Commissioning Report. 6) Psyback period. IRR and NPV is calibrated on the basic data after resovation. 7) Energy consumption of unit product somes from actual determination. |
|---|--|---|---|--|------------------------------|------|--------------------------------------|--|--------|-------------------|---------|-------|----------|---|---------|-----------|--|----------|---|--------------------------|--|----------------------------------|------------------------------------|---------------------------|---|--|--------|----------|---|
| Hon St. Xuu Dag Bag Sa Xu | The off of the control of the contro | is plant was established as a literitively owned plant in 1980 occupies an area of over 150 (1mw-1/15 heatrare). Frior to project, the plant has fixed project, the plant has fixed for object an amual output of million bricks (common brick uivalent). While it has fixed produces an annual output of million bricks (common brick uivalent). While it has fixed plant in the state of the state plant of the state of the state plant of the state of the state plant of the state of the state of 1.80 million bricks (common brick uivalent). While it has fixed plant different of the state plant of the state of the state of 1.80 million bricks (around the state of 1.80 million for the state of the state of the state of the plant of the state of the state of the performation and fired hollow is (module 240-240-115) he price of the performated is 0.40 (H3 Yuan piece and the foreation rate is ecoptance the performa- to is over 37%. As a result of novation brick quality provide and the state state of the provide state state of the performation is larger of the performation of the performation is not an and store state of the products are stold on the call market in NFan. | Production process and equipments: Boxing faceder — coarse rolls — -tolls crusher — -tolls crusher — double shaft mixing extruder — -tou- tage vacuum extruder — - colum extruder — - colum extruder — - colum cutter — goon brick cutter — - adobe transporting machine transporting machine cutter — adobe transporting machine transporting machine tr | Internal combustive <u>cond</u> (t) External combustive <u>cond</u> (t) Power/NWb | 10062.50 412.50 | 0.2 | 2874. 86 0 3 157.99 3032.84 | Coel: 1.15 tcc Power: 0.063 tcc bcc consum tion L21 tcc consum tion | 10,000 | 10,000 bee/a/ | 3032.84 | 2.493 | 7560.8 | 1)Renewing process equipments Replace the original extruder with Type JZK 50/45 two-stage vacuum extruder. Add 1 set of new hi- speed fine rolls and 1 set of new double shaft mixing extruder. Renew die, model and core. Replace the original column cutter with vertical column cutter. Instoduce 1 set of loader to transport raw material. 2)Annular kiln renovation The wall of the annular kiln was repaired and the internal and external wall and kiln door were sailed 1 set of Type ZFJ & blower was introduced. The drainage system of green brick yard was renovated to reduce loss of adobe when rainy weather or heavy rain. 3)Non-power compensator controlling system was added to extruder. | 72.75 | 12,000.00 | Commerciat Ioan Entrustment Loan Seif- Funding | 62.82140 | The renovation project had been completed according, to the technical plan. | 2005.03.10 ~ | Payback period IRR NPV Cost of energy saving | 3.70 66 23 62.95 187.18 | year % ¥ 10, 000 | 10,0 2500 com Srick | Coel: Power: Power: C consum ption | 0.94 tce/10,004 bce 0.056 tce/10,006 bce | 609.29 | 1,518.95 | 1)The baseline year is in 2004. 2)The data in Business Profile column corres from field investigation. 3)Phinical quartity of energy consumption comes from the Feasibility Report. 4/Conversion factor is derived from farmula, that is effect (2) along the second of fast (2) alon |

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| | The pri- occur (tr pro- of pro- ni- | This plant was established as a p privately owned plant in 2000, it occupies as area of over 110 mu (timu=1/15 hectare). Prior to the project, the plant has fixed assets of 1.08 million RMB Yuan and produces an annual output of 34 million bricks (common brick remundered). While it he deat | Production process and equipments: Cinder crusher +- boxing feeder | Internal combustive <u>coal (t)</u> External combustive coal (t) Power/MTh | 8500. 60 3770. 00 645. 00 | 0.196 | 1,666.00 2,510.82 247.42 | Coal: 1.23 tce/10,0 bce Power: 0.07 tce/10,0 bce | 90 | | | | 1)Annular kä The original : annular kiln v surface backt away and the roof was refii repairing. | n renovation sets of 30 chambers ere sealed. The ling was carried leaking (fue and arch of and tamped after | | | Commercial Ioan Entrustment Loan Self- Funding | 40.81160 | | | Payback period IRR NPY | 1.06 107,00 228.75 | year •: ¥ 10, 000 | | Coal: 1.0 | 097 tce/10,000 bce 062 tce/10,000 bce | | | 1)The baseline year is in 2004.2)The data in Business Profile column comes from field inventigation. 3)Phisical quantity of energy consumption comes from the Feasibility |
|----------------|---|--|--|--|---------------------------------|-------|--------------------------------|---|-----------------------|----------|-------|----------|--|---|-----------|----------------|---|----------|--|------------------------|---------------------------------|--------------------------|-------------------------|-------------------------------------|-----------------------------------|--|----------|----------|---|
| Xind 15 and Co | steps arrier 45 coph pro pose pose pose pose pose pose pose pos | avarent, while it has fixed et of 1.59 million RMB Yuar de of 1.59 million RMB Yuar directorea an annua's output of multion bricks (composed brick ivident) after removation. Au sent, the plans employs 97 optie including a lochaical optie and the salary is 880 RMI an/month on avarage. The in raw material is cludy and di perforsate that icit, (module due for formate thristic, (module 2015 - 90) and fired hollow dk (module 240 - 240 - 115), e price of the performate in 0.3 (B Yuan/pioce and the formition rate is over 20%. The to over 45%, As a result of ioward 67%, As a result of iowa | double shaft mixer — vacuum extruder — extruder — extruder — extruder = extrused drying fring in annular kin annular kin The main energy consumption equipments 1)2 sets of repaired 30 chambers annular kiln 2)Cinder crusher 3)H'sspeed fine rolls 4)Double shaft mixer S)Vacuum extuder 6)Column cutter 7)Green brick cutter 8)Exhausted blow er | Sum tota] | | | 4,424.24 | C energy 1.30 tce/10,0 consum 1.30 bce ption | 3.410 10.00 boe/a. | 4,424 34 | 2.493 | 11,029,6 | 2)Process equ A new excav And the equi cinder erushe rolls and vacu- installed and 3)Electric eq Transducer co added to exh power compe system was a speed fine no 4)Drainage s yard was rem 5)Staff trainin | ipments renovation wor was introduced. ments including f high-speed fine ium extruder were lebugged. ipments renovation introlling system was usted blower. Non- nator controlling Ged to extruder, hi- iand mixer apiece. rem of green brick match. | 50.7356 | - 12,600.00 | Financial Assistance | | The renovation project had been 21 completed according 21 to the technical plan. | 005.03.10 005.08.31 | Cost of cmergy saving | 118.30 | ¥1/tce | 10,000 4,500 common bricks/a. | C energy I. consum ption | .36 1te/10,000 bce | 641.64 | 1,599.61 | Report. 4)Conversion factor is derived from formula, that is Conversion factor = Factual closel of fact/ Calorific value of cost aquivalent. 5)Total investment and GEF conves from the Imalitation and Commissioning Report. 6)Paytock period, IRR mailtaino and NPV is calibrated on the basic data after renovation. 7)Energy consumption of unit product comes from actual determination. |
| Local | | Total | | | | | | | | | | | | 852.45 | 180000.00 | | | | | | | | | | | 9910.09 | 24705.85 | | |

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